

**Environmental Scarcity, Hydropolitics,  
and the Nile**

*Population Concentration, Water Scarcity and the Changing  
Domestic and Foreign Politics of the Sudan*

**A thesis submitted by  
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in fulfilment of the requirements for the degree of  
DOCTOR OF PHILOSOPHY IN DEVELOPMENT STUDIES  
Institute of Social Studies  
The Hague, The Netherlands  
2007

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This dissertation is part of the research programme of CERES, Research School for Resource Studies for Development. Funded by the Netherlands Fellowship Programme (NFP)

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Printed in the Netherlands.

ISBN 978-90-423-0308-9

Shaker Publishing BV  
St. Maartenslaan 26  
6221 AX Maastricht  
Tel.: 043-3500424  
Fax: 043-3255090  
[http:// www.shaker.nl](http://www.shaker.nl)

*To the souls of my brother  
Abdelkarim El Zain*

*And my sister  
Um Na'eem El Zain*

*Who both passed away while I was away conducting this PhD research*



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## Acknowledgements

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In my long virtual journey sailing up and down the Nile and straying into surrounding deserts and wetlands I learned enormously, I gathered many stories to tell and I acquired thrilling insights that will always remain fresh in my mind. Only a small part of these are contained in this book. In this long journey I received the support of many people without whom my research on the Nile and its surroundings would never have come to fruition. I am mostly indebted to my doctoral promoters Professor Martin Doornbos, Professor Mohamed Abdelrahim Mohamed Salih and Dr. Abbas Abdelkarim, whose deep understanding and support throughout the years was essential for the completion of this research.

Professor Martin Doornbos guided me with patience and kindness, giving me ample space to develop my ideas. I am grateful for his genuine interest in my research and his sincere encouragement, and his patience to read and give extensive, insightful and sharp comments on my lengthy chapters, which helped me steer them and to dock on safe and firm ground. With the help of Professor Martin I could keep my boats in a state of readiness, my masts upright and sails stretched. I am grateful for his constructive criticism, which helped me rearrange my ideas and sail confidently on my own initiative to discover the Nile.

I am grateful to Professor Mohamed Salih for his insightful guidance. I particularly cherish his critical comments and suggestions to focus my study and improve the manuscript, which were crucial for putting it in its current shape. I thank him especially for the fresh materials on the Nile he provided and for the use of his rich and exotic collection of books. Mohamed Salih opened a lot of windows for me through his extensive expertise and network of friends and colleagues, which facilitated my fieldwork and helped me overcome unpredicted difficulties. I immensely appreciate this.

I am grateful to Dr. Abbas Abdelkarim for his guidance and friendly support throughout my time at the ISS. His sharp criticism helped me to see with the eyes of a fish through the splashy waves of debates on the Nile. Abbas and Samia have been great friends who supported me in difficult times and I will remember them with great appreciation.

Many thanks indeed are due to Professor Mikiyasu Nakayama, whose guidance, while I was at the Institute of Advanced Studies/United Nations University in Tokyo, helped me focus the study. His sharp observations were a great aid for

me to steer my arguments and my thoughts towards a more doable research. His encouragement even after I left Japan is immensely appreciated.

I am grateful to the ISS for providing me the opportunity to complete my PhD, especially the generous financial support of the Netherlands Fellowship Programme. Living in the ISS international community I was exposed to great intellectual currents enriched by the variety of multicultural backgrounds and outlooks, resulting in synergies across these currents, cultures and outlooks. All this created solid ground for an interdisciplinary strategy of viewing the development world in this bright development school. This became my toolkit, which I carry with me wherever I go. I thank the ISS and its community not only for my experience there but also for its preparing me to experience a world that this community may perfectly symbolise. Colleagues, faculty and administrative staff all contributed to create an ideal environment for studying and articulating ideas, and ultimately for completing this research. Of the many people at the ISS who I highly appreciated I would particularly like to mention Ank van den Berg and thank her for her help, understanding and pleasant character. Dita Dirks, Maureen Koster, Els van der Weele, Cynthia Recto-Carreon and Marianne van Dieren were a great help to me. I could hardly imagine a smooth process without their committed involvement, good hearts and pleasant characters. I am grateful to Maureen for handling my PhD file while I finalised my thesis. I am grateful to Dita for following up with me thereafter and for continuously reminding me to finish the trimming of my thesis after it was declared too long. Dita and Maureen have given their hearts to the PhD programme at the ISS and they will always be remembered for their great help and attentiveness.

Many thanks are also due to John Steenwinkel for giving me access to his book collection on the Sudan, which greatly helped me at the initial stages of this research. Thanks are due to Rev. Waltraut Stroh for her consideration and providing me with an intelligent article on the Nile waters and for Aregawi Berhe for providing me with articles on conflict on the Nile. While all the people I met at the ISS are supportive in many ways, I also remember with gratitude the kind and encouraging words of Wicky Meynen and Els Mulder which helped me through hard times.

My deepest gratitude goes to all my colleagues and friends at the ISS. It was a pleasure to meet them, to share space with them and to figure out together some of the many issues boggling our minds. I especially cherish the company of my office mates Amani Elhidani, G. Vijay, Karen Gabriel, Merera Gudina, Akinyinka Akinyawada and Admasu Shiferew. I fondly remember the long and illuminating discussions and the warmth and friendship we maintained. I especially remember with gratitude and deep sadness the late Ranjit Dwivedi, my office mate, whose vibrant character, sincere commitment to changing realities on the ground and a great intellect inspired me so much. I remember also with gratitude my year mates and friends Merrra Tegegne, Hannington Odame, P.K. Vijayan, Nicky Pouw, Sarah Gamage, Daniel Chavez and Hayyalu Shiferaw. Their intellectual company

was a source of inspiration and their friendship provided support in the long walk to the PhD.

My appreciation goes to all the Ph.D. students at the ISS. I cherished the good moments with them and appreciated the collegial and friendly interactions. I would particularly like to mention the names of my friends and colleagues: Nahda Younis Sh'hada, Sharada Srinivasan, Le Thi Van Hue, Ayalew Gebre, Getnet Alemu, Richard Tiemoko, Anne Karanja, Grace Fisiy, Najmi Yousef, Abebe Haile Gabriel, Terefe Degefa, Theodros Bekaffa, Alex Izurieta, Maha Mahfouz, N.C. Narayanan, Imani Tafari, Men Ngo, Caludius Preville, Omu Kakujaha, Nicholas Awortwi, Marco Sanchez, Mathew Kurian, Jun Borrás, Nguyen van Phuc, Nguyen Manh Cuong, Paulos Chanie, Fenta Mandefro, Nisrine El Ghaziri, Mamoon Dawood, Albert Musisi, Camilo van Villa Cotthem, Yu Kojima, Imad Sabi, Godfrey, Babette Resurrection, Edsel Sajor, Philomen, Nguyen Thu Hang, Matundu Hailonga Pandu, Le Thai Thuong Quan, Sailaja Nandigama, Nguyen Song An, Nguyen Huu Dung, Bimala Rai, Nguyen Do Anh Tuan, John Agbonifo Osayere, Malika Basu, Veronica Bayangos, Veronica Gottret, Pascale Hatcher, Daniel Oshi, Rose Wambui Wamuthenya, Rakhi Gupta, Georgina Gomez and Lu Caizhen

Many of my friends in the Sudan and elsewhere endured this long process with me and wholeheartedly stood by my side, providing me with the rather inaccessible information from home and the essential materials for my research, particularly, at the initial stages but also filling the gaps after my fieldwork. They are too numerous to mention all of them here. My friends Mohamed Siraj, Eihab Kheiri, Ahmed Sadig, Hala Ismail, Mohamed Eldei, Abdelmahmoud Ibrahim, Mohamed Almahi and Gasim Yousif were particularly supportive.

I express special thanks to Professor Abdel Ghaffar Mohamed Ahmed and Dr. Samia El Hadi El Nagar for their support while I was conducting my fieldwork in Ethiopia and the Sudan. Thanks are also due to Dr. Awad Al-Sid Al-Karsani, Head of the Political Science Department at the University of Khartoum, who provided me with all necessary documents which facilitated my registration at the ISS. In the Sudan also I must express my sincere gratitude to the Department of Statistics for providing me with the Sudan's censuses data and analysis.

My friends in Europe and other parts of the world, particularly Michaela Told, Eisa Abdelgalil, Mekki Addukhri, Kamal Bilal, Idris Hamid, Asim Agabani, Siddig Elhassan Ishaigir, Osama Saad Ahmed, Yetty Haning, Sayed Zeidan, José Haanappel, Archana Shah, Nobuko Ohno and Yoshiku Takahashi gave me great emotional support. I will remember them all with great joy and gratitude.

In Ethiopia I am grateful to the Department of Political Science and International Relations/College of Social Sciences/Addis Ababa University for hosting my research in Ethiopia, particularly Asnake Kefale, who at that time was the head of department, and Dr Gebru Mersha. I am grateful also to the Organization for Social Science Research in Eastern and Southern Africa (OSSREA) in Addis

Ababa for allowing me to use the invaluable collections in the documentation unit and especially to Helina Girma who is in charge of this unit.

I express my special thanks to the faculty and staff of the Institute of Advanced Studies/United Nations University in Tokyo for their support in creating an atmosphere for study and interaction, especially Bradnee Chambers, Taeko Okada, Miho Komiyama, Nobuyuki Kawade, Motoko Seko and Ng S.T. Chong. I remember with great joy the friendship and enriching discussions with my PhD intern colleagues at the Institute of Advanced Studies/UNU: Pooya Alaedini, Basak Koyuncu, Gergely Toth, Kanie Norichika, Anoop Singh, Changki Kwon, Mohammad J. Kuna, Edgar Aragon, Jonathan R. Strand, Mangala Subramanian; Timothy Afful-Koomson, Tobias King, Lifeng Li and Tahmina Khatun.

I express my sincere gratitude to the Department of Geography and International Development Studies at Roskilde University/Denmark for providing me with a wonderful research environment, which through the support of a guest PhD scholarship helped me to finalise my manuscript. Special thanks indeed are due to Inge Jensen, Christian Lund and Stig Toft Madsen for their friendly and encouraging support.

I express my deepest gratitude for NWO-WOTRO (the Netherlands Foundation for the Advancement of Tropical Research) for its support through its small (travel) grants, which helped me collect essential data to bridge some gaps in my research.

Last, but not least, I express my deepest gratitude to Michelle Luijben for the excellent editing and the impressive fine-tuning of my arguments. The job she did and the advice she conveyed greatly improved the readability and presentation of this thesis.

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## List of Acronyms

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AUF	African Unification Front
BNVO	Blue Nile Valley Organisation
CBOs	community-based organisations
CIDA	Canadian International Development Agency
COVA	Commission of Voluntary Action
CPA	Comprehensive Peace Agreement
CPS	Communist Party of Sudan
CSOs	civil society organisations
CSS	Centre for Strategic Studies
DRC	Democratic Republic of Congo
EMDPIC	El-Hamdab Marwi Dam Project Implementation Corporation
MOEM	Ministry of Energy and Mining
GAPS	Group for Alternative Policies for Sudan
GCI	Green Cross International
GOS	Government of Sudan
ELF	Eritrean Liberation Front
ELM	Eritrean Liberation Movement
ESPAC	The European Sudanese Public Affairs Council
FEWS	Famine Early Warning Systems
FRD/LC	Federal Research Division of the Library of Congress
HAB	Horn of Africa Bulletin
HAC	Humanitarian Assistance Commission
HCENR	Higher Council for Environment and Natural Resources
IBT	Inter-Basin Transfer
ICCON	International Consortium for Cooperation on the Nile
IDPs	Internally displaced persons
IGAD	Intergovernmental Authority on Development
ILA	International Water Association
ILC	UN International Law Commission
IMT	irrigation management transfer
IWRM	integrated water resource management
JEM	Justice and Equity Movement
KFAED	Kuwait Fund for Arab Economic Development

KLM	Kush Liberation Movement
KSC	Kenana Sugar Cane
MOA	Ministry of Agriculture
MOCI	Ministry of Culture and Information
NBI	Nile Basin Initiative
NCP	National Congress Party
NCS	National Comprehensive Strategy
NETWAS	Network for Water and Sanitation
NGOs	Non-Governmental Organisations
NIF	National Islamic Front
Nile-COM	Council of Ministers of Water Affairs of Nile riparians
Nile-Sec	NBI Secretariat
Nile-TAC	NBI Technical Advisory Committee
NCR	National Council for Research
NRZ	Non-Riverain Zone (Kordofan, Darfur and Eastern regions)
NSCSE	New Sudan Centre for Statistics and Evaluation
PANA	Pan-Africa News Agency
PJTC	Permanent Joint Technical Commission
RZ	Riverain Zone (Khartoum, Central, Northern and Southern regions)
SADC	Southern Africa Development Community
SCRA	Strategic Commodity Reserve Authority
SIRWA	Structurally Induced Relative Water Abundance
SIRWS	Structurally-Induced Relative Water Scarcity
SIWI	Stockholm International Water Institution
SLM/A	Sudan Liberation Movement/Army
SPLM/A	Sudan's People Liberation Movement/Army
WDM	water demand management
WWC	World Water Council
WWF	World Water Forum
WWV	World Water Vision

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# 1 Introduction: Research Context, Problem, and Methodology

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## 1.1 Introduction

The 1980s marked a dramatic transformation in the relationship between the Nile and its surroundings (the expansive plains to the west and the east of the Nile in the Republic of the Sudan). For the first time in known history the inhabitants of (later immigrants from) these areas faced chronic food shortages and became food-aid dependent, taking refuge on the Nile banks and seeking resources and settlement there. About 30 per cent of the Sudan's population in the late 1980s was on the move on account of droughts and the subsequent famines and tribal conflicts. Simultaneously, civil war caused the displacement of a large proportion of the population from the upstream regions of southern Sudan. In fact, unrelenting large population movements continued largely towards the urban areas on the banks of the Nile, to the large-scale agricultural projects irrigated by this river's waters, and to other areas near the Nile and its tributaries. This concentration of populations along the banks of rivers in central Sudan led to an increasing demand for Nile water. This precisely matched the rising demand for food, where irrigation, particularly in the lower Nile Basin, as Swain (2002:299) argues, became a cornerstone for food security (see also Guvele and Featherstone 2001:364). In fact, the striving for food security has been espoused in official discourse by both democratic and authoritarian governments in the Sudan by virtue of its direct relation to stability and political legitimacy.

Population concentration along the banks of the Nile caused enormous pressure on this river's scarce waters. The new population pressure on the Nile waters arose at a time when it was becoming 'increasingly evident that the supply of Nile water is not likely to meet all future demands' (Waterbury 2002:1). Indeed, like many other major rivers today the Nile, according to Brown and Halweil (1999), has little water left when it reaches the Mediterranean Sea (see also Orr 2002). Characteristic of the Nile is that it has modest runoff combined with a high demand for its water (Swain 2002:294). Accordingly, the Nile's future is grim, for '[e]ven if the Nile could be made available *exclusively* for Egypt's use, they would still have to import grain to sustain their current population. Forty percent of Egypt's grain is already imported, and the Egyptian population is expected to nearly double by 2050' (Orr 2002, italics added, see also Onyeji and Fischer

1994:283). The picture becomes grimmer still as the two other main contestants for Nile waters, the Sudan and Ethiopia, 'will double and triple their populations respectively' (Orr 2002). The Nile is therefore being described as a 'classic case of international resource competition' (Brunnée and Toope 2002:122), a 'crisis postponed' (Adams 1983); even more distressing is that the Nile is being seen as 'a war waiting to start' (MacNeill *et al.* 1991:56). This bleak picture haunts the region and reshapes relations among its co-riparians, their chances for economic development, and their ability to establish a cooperative framework and benefit from international investment. Under these circumstances of increasing scarcity of Nile waters at the international level, at the domestic level in the Sudan water scarcity is also being felt and this country is turning to the Nile to meet its rapidly increasing demand for water.

Until recently, the Sudan was considered water-abundant. Sandwiched between the major consumer of Nile water (Egypt) and the major supplier (Ethiopia), however, the Sudan shows more alarming trends than is often recognised. Undergoing what official documents and independent organisations and researchers describe as water scarcity (HCENR 2003, CIDA 2002, Dellapenna 1997:126, Abu Sin and Davies 1991:263), the Sudan is currently putting more emphasis on exploitation of Nile waters. Reasons behind this change necessitate a thorough investigation of the Nile system and of what is taking place in the landscape surrounding it.

This research is informed by the interface between physical and social geography, in which resources of the Nile system in the Sudan are reshaped by society and society is affected by the environmental outcomes of this reshaping. This introduction chapter largely details the physical geography of the Nile in order to ascertain the amount of water in the Nile system, as this is considered the best independent factor with which to define water scarcity in the Nile Basin. Understanding this factor helps pave the way to an understanding of its interface with social geography. The latter, according to Frédéric Roulier (2004), deals with the results of the relationship between space and society (integration/exclusion, mobility, territories and territorial stakes, and landscapes) and the geographical variations of these results, relating to scales of analysis and social groups. In this sense, social geography essentially questions whether physical geography is crucial in defining water scarcity.

This chapter is divided into four main sections. Section 1.2 places the Sudan in the Nile context. It represents the context of water scarcity, namely the nature of the Nile, its geographic and climatic zones, its water flow, number of countries through which it runs and associated hydro-political issues. Section 1.3 describes the research problem and its scope as well as specific research questions, objectives and arguments. Section 1.4 explains the research and data collection methodology. Section 1.5 outlines the thesis organisation.

The last few decades witnessed an increasing international concern with fresh water issues, which culminated in the formal creation of the World Water Coun-

cil in 1998, which established the World Water Commission for guiding the World Water Vision (SIWI 1999:5). The increased international concern with water is exemplified in the various large gatherings that have been held, for instance, the World Water Forums,<sup>1</sup> which involved a variety of stakeholders. 'At the turn of the [millennium] a loud call for making water everyone's business can be heard' (SIWI 1999:3). Besides putting water centre stage, this increased concern has indicated that certain problems about this vital resource need to be studied and understood. The response of scholars from various disciplines, planners and of activists in dealing with such problems has been voluminous, giving rise to serious questions. Pregnant with answers these contributions have yielded some interesting and insightful debates. An independent sub-discipline, i.e. hydro-politics, has evolved in association with conflicts, or, otherwise, cooperation over water issues. 'Hydro-politics is the systematic study of conflict and cooperation between states over water resources that transcend international borders' (Elhance 1999:3). A whole new glossary is now evolving around the concept of "hydro-politics" – involving concepts such as "eco-hydro-solidarity", "hydro-conspiracy", "hydro-nationalism", "hydro-political security complex", "hydro-solidarity", "hydro-sovereignty", "blue water", "green water", "virtual water", etc. – establishing it as a promising sub-discipline and a fresh frontier for research.

## 1.2 The Sudan in the Nile Basin context

The Nile water is inherent in the international engagement over water issues (Chapter 2). The river, which 'has been for millennia a subject of contemplation, an attraction for travellers, an allure for strategists and empire-builders' (El Zain 2004:617) is taking centre stage now in relation to environmental problems and, particularly, water scarcity. The Nile often appears as the "typical example" where the spectre of water scarcity is viewed as haunting the banks of a river. Water scarcity in the Nile Basin, as viewed by many researchers, is entering a critical stage, threatening most, if not all, Nile riparians. Besides Egypt, which is witnessing water stress increasing every month, the upstream Nile riparians – Tanzania, Burundi, Rwanda, Kenya, and Ethiopia – were expected to enter a stage of water stress by the end of the twentieth century (Hultin 1995:31, Laki 1998:289). Uganda will follow suit by 2025 (Laki 1998:289) and Sudan, which is considered to have 'a major alternative to Nile water because of its relatively high rainfall' (Waterbury 2002:43), will too enter the stage of water scarcity. Originally the Sudan was viewed, according to some earlier studies, as set to join the club of

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1. Organised by the World Water Council (WWC), the first World Water Forum (WWF1) convened in 1997 in Marrakech in Morocco, WWF2 in The Hague in the Netherlands with over 5,000 participants (WWC 2000) and WWF3 in Kyoto/Shiga/Osaka in Japan with over 24,000 participants (WWF3 Secretariat 2003). WWF4 is anticipated to take place in Mexico in March 2006. In sum, increased concern about water is everywhere.

water-scarce countries only by 2050 (see Darwish 1994). However, the dynamics on the ground are pushing ever faster towards scarcity and Sudan is now experiencing water shortage as noted above. Similarly, like the Sudan, the two Nile riparians Rwanda and Burundi, according to Rockstrom (1999:13), ‘were lifted forward as particularly vulnerable countries on the basis of rapidly growing water stress and high demographic pressure on arable lands.’ The only Nile riparian that will be water abundant beyond 2050 is the Democratic Republic of Congo (DRC), because of its location in the water-rich Congo Basin (Laki 1998:289). In fact, DRC with the second largest river in the world in terms of water discharge, equal to over 16 times that of the Nile (Table 1.1), is unlikely to be under such a threat for some time to come.

The Nile Basin is part of the most water-stressed region in the world (i.e. the Middle East) and part of one of the fastest growing regions in the world in terms of population (i.e. East Africa). The former is characterised by a fragile “hydropolitical” situation, complicated by climatic and demographic factors (Wolf 1995:148). ‘Nowhere else in the world has water become so scarce so quickly’ (Donkers 1997:136, see Higazi 1996:130, Wallace *et al.* 2003: 2011). The latter, i.e. East Africa, represents a case of chronic food insecurity (for details see FAO 1999). In fact, this food insecurity has heightened demand for Nile water and made competition feverish, as riparians use it as a pretext to endorse their claim to more Nile water. In this respect, and as noted earlier, many researchers have portrayed the Nile as the archetype of the international river prone to prompt breakouts of tense conflict over water (Homer-Dixon 1998, 1999, Postel 1993, Turton 2000, Mohamoda 2003:11, Beaumont 2000). Making things worse, experts have postulated that scarcity of Nile water will be aggravated by increasing demand, failure to increase supply to meet new demand, and given the impact of climate change, decreasing current water supply (i.e. a drop in the annual average discharge). Before we investigate these causes of scarcity, as the focus of this research, we first give a brief summary of the amounts of surface water that the Nile system carries, their fluctuations, and possibilities of utilisation by the Sudan and other Nile riparians.

### 1.2.1 The Nile, the longest river in the world

Flowing from south to north, over 35 degrees of latitude, the Nile is the longest river in the world (Hultin 1995:29, Waterbury 1979, Mohamoda 2003:7, Laki 1998:290). Its southernmost source is the Luvironza River in Tanzania, from where it traverses a course of 6,825 kilometres (Elhance 1999:56, see Laki 1998:290) (Table 1.1). The Nile’s two major tributaries are the Blue Nile and the White Nile, with two other tributaries making appreciable contributions, i.e. the Atbara and Sobat (Table 1.2), and a third one (the Bahr El-Ghazal) with little or no flow into the Nile system. The length of this river implies that it traverses topographic and climatic differences, and the associated variations of rainfall,

Table 1.1: Length, drainage area, discharge, and sediment of the 10 major river systems

River	Length (km)	Drainage area (km <sup>2</sup> )	Discharge (billions of m <sup>3</sup> annually)	Sediment load (millions of tons annually)
1. Nile	6,825	3,100,000	84	110
2. Amazon	6,700	7,050,000	3,000	900
3. Congo	4,700	3,700,000	1,400	70
4. Hwang Ho	4,630	700,000	200	2,000
5. Mekong	4,200	795,000	400	800
6. Niger	4,100	1,890,000	180	40
7. Mississippi	3,970	3,220,000	600	600
8. Danube	2,900	1,165,000	200	80
9. Zambezi	2,700	1,300,000	500	100
10. Rhine	1,320	162,000	80	3

Source: (Waterbury 1979:14).

evaporation, and slope as well as a number of states (and their internal components). This combines to create a complicated hydropolitical picture, especially if Nile discharge is modest or small. Such a situation, namely ‘contradiction between extreme length and modest discharge’, according to Terje Tvedt (1992b:81), ‘increases the potential for water stress and provides ample grounds for competition among autonomous interest-maximizing actors experiencing a growing water demand’.

The Nile originates in three geographic and climatic zones. Rivers and streams flowing out of them into the Nile system differ in their water volume, sediment load, and fluctuations in annual discharge. These include, firstly, the Ethiopian Plateau, which represents the major source of the Nile system and where the Blue Nile (Abay), the Atbara (Tekezze), and the Sobat (Baro-Akobo) rivers originate and contribute with 86 per cent of the total discharge (Table 1.2). Secondly, the Equatorial Lakes region contributes the remaining 14 per cent through the White Nile, which actually loses large amounts of its water to evaporation in the *Sudd*<sup>2</sup> region in southern Sudan (Table 1.2). Finally, the Bahr El Ghazal Basin, inside the border of Sudan, contributes a remarkable amount of the water in the *Sudd* region (Mageed 1994:161). The combined contributions of the Ethiopian highlands and the Lakes Region suggest that the Bahr El-Ghazal Basin adds nil to the flow northward, meaning that all its waters are lost to evaporation. In fact, only 1/1000 of the rainfall of Bahr El-Ghazal Basin reaches its outlet at Lake No (Karyabwite 2000:18).

With the watershed extremities of the three geographic/climatic zones making up the larger part of the upstream and expanding up to the Mediterranean Sea, the drainage basin of the Nile occupies a total area of 3,100,000 km<sup>2</sup> (Table 1.1). This area represents one-tenth of the African continent (Gleick 1993) and more than

2. *Sudd* (pronounced as *sedd*) is an Arabic term meaning barrier.

Table 1.2: Nile tributaries: Contribution to total flow

	Annual	Flood period
Blue Nile	59%	68%
Sobat	14%	5%
Atbara	13%	22%
Ethiopian sources	86%	95%
Bahr al-Jabal (White Nile)	14%	5%
Total	100%	100%

Source: Waterbury 2002:129.

one-third of the total area of the 10 Nile riparians, which is 8,889,534 km<sup>2</sup> (calculated from Table 1.4).

Inside this area, we find many large lakes, the main ones of which are Lake Tana in Ethiopia; Lake Albert and Lake Edward, which are shared by DRC and Uganda; Lake Kioga in Uganda; and Lake Victoria, which is shared by Kenya, Tanzania, and Uganda. Lake Victoria represents the second largest freshwater body in the world after Lake Superior in North America (Elhance 1999:54, Carroll 1999:273). Within the Nile Basin, in southern Sudan, we also find the world's largest freshwater swamps (the *Sudd*) (Whittington and McClelland 1992:149, Elhance 1999:56, Laki 1998:292), which has actually witnessed dramatic expansion of area since the early 1960s. This expansion was the cause of devastating floods between 1961 and 1964, when a sudden increase of rainfall in the Lakes Plateau resulted in a 2.5 metre rise in the level of Equatorial Lakes (Yacob 2004). The area of permanent swamps fed by the Albert Nile, the Bahr al-Jebel, the Bahr al-Zaraf, the Bahr al-Ghazal and the Pibor-Sobat rivers, 'may have increased roughly three fold from 7,000 square kilometers to 22,000 square kilometers' (Waterbury 2002:142). The area becomes even larger if we consider the seasonal swamps. 'Temporary or seasonal swamps, fed mainly by torrents from the southwest watershed of the Sudd, increased on the same scale so that the entire swamp surface may have reached seasonally 40,000 square kilometers. This is about the size of Switzerland' (Waterbury 2002:142, see Mageed 1994, Yacob 2004).

The Nile Basin also embodies the world's largest man-made lake – Lake Nasser/Nubia – which has grown continuously in size, save in the droughts of the late 1970s and early 1980s, when it experienced a drop in its waters (Swain 2002:297). The lake stretches 650 km, with 500 km covering south Egypt and 150 km inside Sudan (Gamal 1999) with a total water amount of around 170,000 km<sup>3</sup> (Kjeilen 2004). Lakes being viewed as natural storage and swamps as a cause of losses of water represent important hydropolitical issues, creating tense debates at the national and international levels, especially in connection with the number of Nile riparians and the effect of the different climatic zones on the lengthy river.

As noted earlier, the Nile Basin constitutes more than one-third of the territory of the Nile co-riparians. Sudan, at the heart of the Nile Basin, has one sub-basin totally within its territory and it has portions of its territory in all four other

sub-basins. Thus, the Bahr El-Ghazal lagoon exists exclusively inside the Sudan, while the Atbara sub-basin is shared with Eritrea and Ethiopia (see Swain 2002:294); the Blue Nile and Sobat sub-basins are shared with Ethiopia; and the White Nile sub-basin is shared with Burundi, DRC, Kenya, Rwanda, Tanzania, and Uganda. Further downstream lies Egypt, sharing the main Nile with its only bordering riparian – the Sudan – and contributing virtually nothing to the Nile flow (Laki 1998:295). In fact, between the mouth of the Atbara and the Mediterranean no significant water enters the Nile (Beaumont 2000:492). Egypt, in this sense, ‘is a pure riparian state, receiving all its surface water from outside its borders’ (Waterbury 2002:171). With its large share of exogenous water and little or no endogenous water, Egypt’s competition with the upstream is characteristically largest (Falkenmark 1997:33). Several rivers and streams pour into the Nile system, intersecting the area of the sub-basins; in the Sudan alone over 40 rivers and streams intersect the country’s territory, with most of them pouring into the Nile system (see Al-Mahal and Omer 1992:17).

Sudan is especially important in the Nile system, meaning it is particularly important to study it to provide clues as to dynamics in the larger basin. ‘It is within the Sudan that the known features of the unified Nile and its major tributaries take shape’ (Beshir 1984:62, Waterbury 2002:128). For this and many other riparian qualities, the Sudan stands, in the words of Waterbury (2002), as the ‘master of the middle’ of the Nile system. Of the large drainage area of the Nile Basin the Sudan alone involves 1,978,506 km<sup>2</sup>, making up to 63.6 per cent of the total area of the basin (Table 1.4). Of this country’s total area, 79 per cent lies within the Nile Basin (Table 1.4) (see Gleick 1993). The amount of water that Sudan receives from the upstream countries is 100 km<sup>3</sup> annually of which 65.5 km<sup>3</sup> is released to the downstream. The rest is divided between its internal stream flow (perennial and intermittent) of 20.5 km<sup>3</sup> (including the official share of 18.5 km<sup>3</sup> established in the 1959 Nile Water Agreement) and evaporation in the *Sudd* region (about 16 km<sup>3</sup>) (Gleick 1993).

The Sudan’s annual internal renewable water resources amount to 30 km<sup>3</sup> per year, meaning a per capita share of 1,190 m<sup>3</sup> (Gleick 1993). The total precipitation falling on the Sudan in normal years reaches 1,900 km<sup>3</sup>, which decreases to 1,000 km<sup>3</sup> in years of drought (Al-Mahal and Omer 1992:17). This relatively high rainfall represents a quality highly emphasised by Egypt against Sudan’s claims for more Nile waters and is a reason for internal strife in the Sudan. Rainfall in the Sudan varies drastically; it is mostly concentrated in the south, which gets about 1,500 mm. In fact, it reaches zero in the desert in the northernmost part of the country (Gleick 1993, see Beaumont 2000:491). The volume of seasonal running water in the Sudan is estimated at 3.3 km<sup>3</sup> flowing from valleys and stored in reservoirs and earth dams, both for irrigation and consumption for human and animal populations (MOCI 1998:118).

The two most prominent contestants influencing Sudan’s access to water from the Nile, Ethiopia and Egypt, have comparatively larger areas than the other ri-

parian states. With 365,117 km<sup>2</sup>, i.e. 11.7 per cent of the total area of the Nile Basin, Ethiopia comes second after the Sudan (Table 1.4). Ethiopia has a huge annual internal renewable water resources with 110.0 km<sup>3</sup>, corresponding to 2,350 m<sup>3</sup> per capita (Gleick 1993). Being the 'African water tower' (Dagne *et al.* 1999:228, Shapland 1997), Ethiopia does not receive any water from outside its borders. Rainfall in Ethiopia is the richest of all the Nile riparians, save Uganda (Table 1.4). In the Ethiopian highlands thousands of small streams feed the Blue Nile, the Atbara, and Baro Akobo systems (see Mohamoda 2003:7). Some of Ethiopia's nine other non-Nilotic river systems, like the Awash River, end in an inland delta, while others pour their waters into the Indian Ocean. All these non-Nilotic rivers, save two, are water scarce (for details see Hagos 2000). Ethiopia's water resources from rivers that are not part of the Nile system contribute only 10 per cent of its total surface water (Shapland 1997:99).

The portion of the Nile Basin in Egypt comprises 326,751 km<sup>2</sup>, i.e. 10.5 per cent of the total area of the basin (Table 1.4), making Egypt third with regard to share in the basin's area after Sudan and Ethiopia. The total amount of water available for Egypt is 58.9 km<sup>3</sup>, of which stream flow contributes 55.5 km<sup>3</sup> while 3.4 km<sup>3</sup> is underground water. The total amount of rainfall is 15.3 km<sup>3</sup>. Egypt has little annual internal renewable water resources, only 1.8 km<sup>3</sup>, making for a meagre 0.03 m<sup>3</sup> per capita (Gleick 1993).

A striking fact about the Nile River is that though it is shared by 10 states the area of three of its co-riparians, Egypt, Ethiopia, and the Sudan, comprises 85 per cent of its total basin area. A little less than two-thirds of the Nile Basin lies inside the Sudan alone and 85 per cent of its total discharge, reaching Aswan, originates in Ethiopia (Elhance 1999:54). But most importantly, the most downstream riparian, Egypt, is 98 per cent desert with its population concentrated on the remaining 2 per cent of its area (Hultin 1995:31) and totally dependent on the Nile water for irrigation (Haddadin 2002:205, Swain 2002:296).

Despite its relatively simple hydrological structure (Elhance 1999), the Nile has a complicated social, geographical and geopolitical structure. Sudan is at the heart of this structure. As mentioned, 10 countries share the Nile with different portions of their territories inside the Nile Basin (Figure 1.1). By virtue of this, as Waterbury (2002:1) argues, all 'can lay claims to some share of its water'. These countries are Burundi, DRC, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda. Very few rivers in the world have such numerous co-riparians; in fact, only the Niger River has an equal number of co-riparians; and the Danube until recently had just one country more than the Nile (UNOPS 2003, see Mohamoda 2003:7, Waterbury 1979:63). The Danube now has 17 riparians (UNEP 2002:79) and flows through humid regions running from the west in a south-easterly direction; thus, unlike the Nile, it traverses fewer latitudes. Traversing the Great Desert, the Nile has always remained an odd case of a river running from south to north (Davies 1984) and is described as 'an "exotic river" because it receives no tributary inflow or significant rainfall for the last

3,000 km before it flows into the Mediterranean Sea' (Carroll 1999:273, Dellapennia 1997:124, Kliot 1994). This nature of the river, with its many co-riparians and the further downstream being utterly dependent on it, are illustrative of the "Egyptian condition", which complicates the hydropolitical situation. Egypt is acutely aware of the combination of two geopolitical factors – that of the many co-riparians and the fact that it is utterly dependent for its livelihood on the Nile. This is at the heart of its psychological response to all that transpires upstream (Waterbury 1979:63, Mohamed 1984:4-5). Increasing water scarcity combined with the unequal distribution of water among multiple parties may be paving the ground for greater number of water conflicts (Swain 2002:293).

### 1.2.2 Nile discharge

Despite the fact that the Nile is the longest river in the world with its sources originating in three geographical/climatic zones and with a wide drainage area, its discharge is one of the lowest among the major river systems (see Table 1.1). The average annual discharge that the Nile delivers at the Aswan High Dam is only 84 billion m<sup>3</sup> of water (Elhance 1999:57). Being an average of 60 years (Table 1.3), it is equivalent to a mere 2 per cent and 15 per cent of what the Amazon and the Mississippi carries, respectively (Collins, in Mohamoda 2003).

Like many other rivers, the Nile witnesses fluctuations in its annual discharge as well as in its flow in different periods of the year. Whereas the last three decades of the nineteenth century, generally speaking, had rich average discharge, the first six decades of the twentieth century saw lower average discharge (Table 1.3).

The two striking extremes of periodic fluctuation that the Nile witnessed were in 1916, when the discharge reached 120 billion m<sup>3</sup>, and in 1984, when the river discharged only 42 billion m<sup>3</sup> (Mason 2004:1). Periodic fluctuation in Nile discharge has sometimes been frequent. In three decades it has shown different patterns: in the 1970s discharge was high, in the 1980s low, and in the 1990s about normal (Laki 1998:290, see Whittington and McClelland 1992:149). Even within one decade the fluctuation is striking: in 1971/72 Nile discharge declined to 50 billion m<sup>3</sup>, while it increased to 100 billion m<sup>3</sup> in 1975/76 (Naff and Matson 1984). In this regime, the two main tributaries of the Nile seldom share the same pattern of flow (see Carroll 1999:273-5, Swain 2002:295-6). Thus, while the Blue Nile in the mid-1980s showed a decrease in discharge, the White Nile from the 1960s to the 1980s showed a significant increase. According to Adams (1992:65), 'From 1962 to 1980 discharge of the White Nile into the Sudd was about 40 billion m<sup>3</sup>', while before that it counted for only about 21 billion m<sup>3</sup> (Naff and Matson 1984: 128).

Rainfall upstream is richer, where seven riparians have a mean annual rainfall of over 1,000 mm. (Table 1.4). The three climatic zones that make up almost all of the flow of the Nile, however, differ. According to Tafesse (2001:23), rainfall on

the Ethiopian highlands and the Lakes Region is estimated at 1,700 mm and 1,400 mm per year, respectively, while in southern Sudan it is in the range of 1,000 mm annually (see also Chapter 4, Table 4.1). However, with its remarkable length stretching from south to north across the tropical and sub-tropical climatic zones, the Nile is characterised by high variations in patterns of rainfall and evaporation over its basin, over both time and space. The Ethiopian highlands, which supply the Nile system with 85 per cent of its flow, probably represent the most extreme variations. For instance, 'the Blue Nile may discharge sixty times as much water during floods as during the rest of the year' (Elhance 1999:57). It is noteworthy that the Blue Nile contributes 75 per cent of the combined annual flow of its waters plus that of the White Nile (Elhance 1999:57). Thus, during floods, the Blue Nile virtually blocks the slow flow of the White Nile at Khartoum, causing significant flooding along the banks of the latter (USAID 2001) while its discharge during the rest of the year is very low and the river actually dries up in some places. The White Nile Basin gets richer and rather longer periods of rainfall, which becomes lesser the farther north. Thus, 'the fluctuations in rainfall and water extraction upstream do not seriously affect the downstream hydrological regime of the river, mainly the large Sudd swamps help to mitigate any downstream impacts' (Elhance 1999:57).

### 1.2.3 Evaporation in the Nile system

Evaporation, naturally, differs according to the climatic zones in the Nile Basin. Thus, whereas the evaporation rate is highest in Egypt, at 2,800 mm/yr, it is minimal in the Ethiopian highlands, averaging about 600 mm/yr, while it is 1,000 mm/yr and 1,400 mm/yr for northern Sudan and the Lakes Region, respectively (Tafesse 2001:23). A combination of hot climate and large surface of water bodies causes a great loss of Nile waters. The huge *Sudd* floodplain is responsible for the loss of about 50 per cent of the waters of the White Nile system (Mageed 1994, Elhance 1999:57, Goldsmith *et al.* 2002:204). The evaporation losses in the *Sudd* floodplain 'have been estimated to be as much as 14 billion cubic meters a year, almost exactly the amount of water later added to the White Nile by the Sobat River from Ethiopia' (Elhance 1999:57). North-east of the Sudd region, the Machar Marshes causes the loss of 10 billion m<sup>3</sup> and Lake Victoria and Lake Albert lose 6 billion m<sup>3</sup> (Tafesse 2001:25, Kliot 1994). Lakes, natural or artificial, contribute to evaporation. Over Lake Nasser/Nubia, stretching about 480 km behind the Aswan High Dam, with its large surface area, as noted earlier, more than 10 billion m<sup>3</sup> are lost to evaporation annually (Tvedt 1992b:86) and in central Sudan, the Jebel Aulia Dam causes the loss of 2.8 billion m<sup>3</sup> of water (Whittington and McClelland 1992:150). The combined evaporation losses of Nile water amount to 40 billion m<sup>3</sup> a year (Elhance 1999:57). High evaporation losses over the Sudanese and Egyptian territories and over the lakes in the upstream have great significance for hydropolitics in the basin (Elhance 1999:57).

Table 1.3: Mean and standard deviation in the discharge of the Nile

Number of years	Period	Mean (billion m <sup>3</sup> )	Std. deviation (billion m <sup>3</sup> )
30	1870-1899	110.0	17.1
60	1900-1959	84.5	13.5
90	1870-1959	92.6	19.8

Source: (Waterbury 1979:21).

Table 1.4: Nile Basin: Areas and rainfall by country

Country	Total area of country (km <sup>2</sup> )	Area within the basin (km <sup>2</sup> )	As % of total basin area	As % of total area of country	Average annual rainfall in the basin area (mm)		
					min.	max.	mean
Burundi	27 834	13 260	0.4	47.6	895	1 570	1 110
Rwanda	26 340	19 876	0.6	75.5	840	1 935	1 105
Tanzania	945 090	84 200	2.7	8.9	625	1 630	1 015
Kenya	580 370	46 229	1.5	8.0	505	1 790	1 260
Zaire	2 344 860	22 143	0.7	0.9	875	1 915	1 245
Uganda	235 880	231 366	7.4	98.1	395	2 060	1 140
Ethiopia	1 100 010	365 117	11.7	33.2	205	2 010	1 125
Eritrea	121 890	24 921	0.8	20.4	240	665	520
Sudan	2 505 810	1 978 506	63.6	79.0	0	1 610	500
Egypt	1 001 450	326 751	10.5	32.6	0	120	15
Nile Basin		3 112 369	100		0	2 060	615

Source: FAO (1997).

#### 1.2.4 Underground water in the Nile Basin

It has been argued that Egypt and the Sudan alone have exceeded the capacity of the existing system of surface water supply in the Nile Basin (Waterbury 1979). The 1959 agreement between these two countries (details below) divided all Nile waters between them. As surface water is increasingly scarce, it has been presumed that there is no other option for increasing water supply than turning to underground water. The question, therefore, is whether there is enough underground water to meet the increasing demand. According to Elhance (1999:57), 'some geological surveys and estimates suggest there may be as much as 150 billion cubic meters of water stored beneath the soils of Upper Egypt and another 500 billion cubic meters under the Nile Delta'. This is equivalent to Egypt's current consumption for a period of a decade. However, these amounts can be used only to support consumption from river water. Such reserves, as Elhance (1999:57) argues, 'could conceivably satisfy Egypt's growing water needs for decades to come'. In the Sudan underground water is found in an area covering half of the country's territory (MOCI 1998:118) and is estimated on the order of 4,900 km<sup>3</sup> – equivalent to 60-fold the average annual discharge of the Nile (Al-Mahal

and Omer 1992:17). Another source cites the amount of underground water as equivalent to '200 fold of the Sudan's portion of the Nile water' (MOCI 1998:118). Of this total only 1.3 km<sup>3</sup> is utilised (Al-Mahal and Omer 1992:17).

Underground water is not at the disposal of users mainly for reasons involving the cost of its extraction. However, more important is its sustainability. Elhance (1999:57-8), referring to the underground water estimates for Egypt, notes that 'even if these estimates turn out to be correct, only a fraction of these potentially huge supplies may be stored at sufficiently shallow depths to make their economic exploitation possible'. This is so, in his view, because 'unlike the fossil waters lying underneath the western desert of Egypt, in ancient aquifers it shares with Libya, aquifers in the Nile basin may be recharged only by the river itself'. Maintenance of the river regime, therefore, is vital in order to make use of any underground water. In other words, 'any reduction in the river's flow may have a substantially degrading impact on the underground water reserves. Nonetheless, it is estimated that with proper recharge, up to 1 billion cubic meters of these reserves may be used annually' (Elhance 1999:58). Having detailed the amount of water involved, we now return to the forces driving water scarcity in the Nile Basin.

### 1.2.5 Water sharing agreements in the Nile Basin

Unequal distribution of water among multiple parties combined with the current driving forces of water demand in the Nile basin may be paving the ground for a greater number of water conflicts. What makes the situation more precarious is that there are no agreements acceptable and binding for all Nile riparian states which help mitigate conflicts or decrease mismanagement of the shared waters of this river. Only five historical agreements have been made on regulating the Nile flow. These, however, are controversial, as they involve only some riparian states or are bilateral or inherited from colonial times.

The first treaty concluded over the Nile waters was the Rome Protocol of 1891 between Great Britain and Italy. Article III of the protocol states, '*The Italian Government engages not to construct on the Atbara, in view of irrigation, any work which might sensibly modify its flow into the Nile*' (cited in Tilahun 1979:49). As is clear the Atbara is only one tributary of the Nile, involving the Sudan, Eritrea and Ethiopia.

The second was the Blue Nile agreement of 1902 between Great Britain and Ethiopia. Besides defining the border between Ethiopia and the Sudan, the agreement states in Article III:

His Majesty the Emperor Menelik II, King of Kings of Ethiopia, engages himself towards the Government of His Britannic Majesty not to construct or allow to be constructed any work across the Bule Nile, Lake Tana, or the Sobat, which would arrest the flow of their waters except in agreement with His Britannic Majesty's Government and the Government of Sudan (Gleichen, cited in Tvedt 1992b:87).



The same stipulation was included in the third agreement – the 1906 agreement between Great Britain and the Government of the Independent State of the Congo. That agreement provided that ‘*The Government of the Independent State of the Congo undertake not to construct, or allow to be constructed, any work over or near the Semliki or Isango river which would diminish the volume of water entering Lake Albert except in agreement with the Sudanese Government*’ (cited in Tilahun 1979:50).

The fourth was the 1929 agreement signed between Egypt and Britain, with the latter acting on behalf of the Sudan, and indirectly on behalf of its East Africa colonies of Uganda, Kenya, and Tanganyika (TFDD 2002). It allocated 48 billion m<sup>3</sup> to Egypt and 4 billion m<sup>3</sup> to the Sudan (Dellapenna 1997). Tadesse (1998) notes, along with Waterbury (1979), that Ethiopia was clearly not a party in the 1929 agreement. Ethiopia recognises neither this agreement nor Egyptian claims of “historical rights”.

Finally was the 1959 “Full Utilisation of the Nile Waters” agreement between Egypt and the Sudan. This agreement established the Permanent Joint Technical Commission (PJTC) and specified quantitative allocations for the two countries. Assuming an inflow of 84 billion m<sup>3</sup> from the Nile sources, the agreement allocates 55.5 billion m<sup>3</sup> to Egypt and 18.5 billion m<sup>3</sup> to the Sudan (Tadesse 1998:17, Waterbury 1979). Noteworthy is that Egypt has benefited from about a quarter of Sudan’s share as agreed in 1959, considered “water-on-loan” (Ahmed 1995:10), as Sudan did not utilise it.

The 1959 agreement between Egypt and the Sudan and the other agreements made during colonial times were considered non-binding for the upstream riparian states (Tadesse 1998, Hultin 1995). This was founded on the “Nyerere Doctrine” on state succession, which considers treaties signed during the colonial era to be non-binding if they are incompatible with state interests (Huggins 2003:2, Hultin 1995:33-4).

### 1.2.5 Forces driving demand for Nile water, causing water scarcity

The increase in demand for the Nile water is attributed to high population growth rates, rapid urbanisation, and other multiple uses of water (Laki 1998:288, see also Carroll 1999:270), where that last certainly includes the continuation of economic development, namely expansion of irrigated agriculture. The increase due to the rapid growth of population is actually presented as the cause behind the increase in demand for water, namely to meet agricultural and urban needs. Growing demand, in association with two other factors, namely the failure to augment water supply and the predicted decrease in actual flow of Nile water caused by climate change, are postulated to aggravate water scarcity and generate instability and conflict in the Nile Basin.

Population growth dominates the international water discourse. In the 1980s and 1990s, the Nile Basin region witnessed one of the highest – if not the absolute

highest – population increments among the world’s regions. With a growth rate ranging between 2.4 and 3.6 per cent (Shapland 1997:83), the population of the Nile Basin is expected to exceed 600 million in 2025, more than double the number noted in 1992 of 259 million (Shapland 1997:83, see also Swain 2002:299). An important related issue is that population growth in the Nile Basin, besides being rapid, is rather recent; and more importantly it is concentrated inside the basin. ‘It is estimated that about 150 million people live within the basin and twice that number within the countries that share the Nile waters’ (Mohamoda 2003:7, NETWAS 2002, see also Swain 2002:299). In other words, half of the population of the Nile Basin countries lives on one-third of their territories. In fact, the Nile Basin has the highest population density in the whole of Africa (AUF 2004). Ensuring water availability becomes even more complex due to the difficulties of augmentation in such a context.

The second factor postulated as aggravating water scarcity is conflicting interests among Nile riparians and their failure to achieve a comprehensive cooperation framework. Since the early 1970s, the water flowing in the river has been considered insufficient to meet the increasing demand of the two downstream riparians, which by the end of that decade seemed to have exceeded the capacity of the existing Nile system, as noted earlier. Indeed, potential irrigation requirements exceed 124 billion m<sup>3</sup> (FAO 1997a). To increase the water supply, Sudan and Egypt engaged in a deal known as the Jonglei Canal project, to develop the waters of the swamps in southern Sudan. This project would have yielded more than five billion m<sup>3</sup> to be divided equally between the Sudan and Egypt. This was considered the first phase of the Jonglei Canal, with a second phase anticipated in which the whole Nile system within the Sudanese borders would be developed, therefore, substantially increasing the amount of water flowing northward (Waterbury and Whittington 1998:103).

Political instability in the Sudan, however, contributed to halt efforts to increase the water supply. After excavation had reached an advanced stage, the machinery of the Jonglei Canal project became an early target and were destroyed at the beginning of the newly resumed civil war in 1983 (Chapter 4). Just as political instability halted this project, it seems that similar instability in the other upstream riparians is likely to produce the same consequences. Another attempt at increasing the water supply by storing water in the Ethiopian highlands instead of in the high-evaporation dams in Egypt and northern Sudan is being debated (Chapter 10). Issues of national security and the nationalistic assertion of rights downstream to secure water seem to have blocked and delayed the reaching of any consensus about storing water in the Ethiopian highlands.

The third factor postulated as aggravating water scarcity is environmental degradation. The worst-case scenario is a combination of decreased actual current flow with water contamination in the lower reaches of the river (Laki 1998:288). Contributors in this regard are environmental degradation and climatic change (Whittington and McClelland 1992:144) and water hyacinth (see

Waterbury 2002). Over the next two to four decades, global warming is set to reduce Nile waters by as much as 25 per cent (Bleier 1997:15).

From all the above-mentioned, and given the weak economies and the prevailing “social resource scarcity”, i.e. scarcity of resources with which to enhance ingenuity in the Nile Basin countries, and in view of the corollary scarcity of effort being invested in effective water management in these countries, severe water shortage seems inevitable. Yet the above are not the only factors contributing to generate a severe water scarcity and obstruct increasing water supply. Another factor, which has been largely left out of debates on water scarcity in the Nile Basin, is the impact of “environmental scarcity” – meaning the political processes that give power to certain segments in society to effect “resource capture”, thus causing “ecological marginalisation” of those whose resources were captured (Chapter 2). This is the focus of this study, which epistemologically shows that physical geography is not the determinant of water scarcity.

### 1.3 Rationale and problem statement

The current research aims to study the role of *environmental scarcity* in causing *water scarcity* in the Nile Basin in the Sudan. More precisely, it exposes to research the impact on the Nile in the Sudan of the *social effects* of environmental scarcity (i.e. decreased agricultural production and economic productivity; population displacement; and disrupted institutions and social relations). The combination of these social effects of environmental scarcity have hardly been debated in connection with Nile waters, though they cut across the three factors postulated above as aggravating water scarcity. In this research, the social effects of environmental scarcity are studied as causes of water scarcity, in as far as they cause populations to concentrate along the banks of the Nile, where this river, like many other international rivers experiencing erratic climatic changes, becomes the only secure survival and opportunity niche. Thus, to depict the processes leading to food insecurity and population displacement as social effects of environmental scarcity, ultimately leading to population concentration along the banks of the Nile, this research explores the nature of interactions between two domains. The first is the domain covered by the Nile River system in the Sudan, hereafter we shall refer to this as the riverain zone (RZ), and the other is composed of the remaining parts of Sudan’s national territory, which we shall refer to as the non-riverain zones (NRZ) (details on components of these two domains in section 1.4). Strictly speaking, the research investigates whether environmental scarcity is causing the population of the Sudan to concentrate inside the RZ more than in the NRZ and whether this replicates and contributes to generating scarcity of the Nile waters. Given the length of the Nile within the Sudan, it is important with regard to use of Nile waters for irrigation for us to view it in terms of the *arid* or downstream RZ and the *wetter* or upstream RZ. It is also important to note that RZ and NRZ are used here to refer to geographical zones inside the Sudan.

Thus, this research studies the growing water demand caused by increased population concentration or density; that being the ultimate consequence of the social effects of environmental scarcity in the RZ. Population concentration, in this research, is taken as an indicator of the degree of environmental scarcity, particularly its social effects in causing movements of population from one region to another. Population concentration, in this respect, is different from population increases *per se*. Population concentration is, in fact, the knot that binds together the entirety of social effects of environmental scarcity. It shows the extent to which these social effects lead to redistribution trends between the RZ and NRZ; as we can calculate the size of population in the former and the number of individuals migrating out of the latter and vice versa. The categorisation of how many people live inside a river basin and how many outside it within a riparian state features in several studies on the Nile (Mohamoda 2003:7) as well as in studies of other rivers. However, although such categorisations are often made in association with the Nile water, reflecting increasing population density in the RZ, this density has been presented in a generalised form and has rarely, if at all, been analysed historically and in relation to its causes. In *The River Nile and Its Economic, Political, Social and Cultural Role: An Annotated Bibliography*, Terje Tvedt (2000) classified 3,486 books, articles, grey papers, and planning documents and reports on the Nile into eight research areas. These included fisheries, flora and fauna, health, physical characteristics, political and cultural history, projects and reports, travel and exploration, and water use and water management. In that last research area, which had 459 entries on the Nile and covers the literature most relevant to our study, only five titles (about 1.1 per cent of the references in this category) relate to the issue of population concentration.

One of the above five titles is from the mid-1960s, when population concentration was not yet a serious problem. It is by B. Trigger (1965) and entitled *History and Settlement in Lower Nubia*. This book discusses among other factors, according to Tvedt (2000:441), 'the role of the Nile as an important geographical feature influencing settlement patterns'. A 1980 title, *Population Distribution in the Lake Basin Authority Area*, by S.H. Ominde (Tvedt 2000:432), is clearly relevant to issues of population concentration. However, within a relatively smaller geographical area. The third title, a conference paper, is largely methodological, and certainly ahead of its time: *The Use of Investigation Teams for Planning the Development of Remote Sparsely Populated Areas*, by H.A.W. Morrice (1953) (Tvedt 2000:428). The fourth, by J.B. Webster (1979), titled *Chronology, Migration and Drought in Interlacustrine Africa*, 'argues in favour of a new chronology of Ugandan history, established on the basis of age generations, famines and droughts combined with registrations of the Nile flows at the Rodah nilometer in Egypt' (Tvedt 2000:444). The last title *Limited Water Resources and High Growth Rate of Population in the Nile Basin*, by A. Gharib and E.E.M. Ilba (1998), clearly emphasised population growth, which is only a partial contributor to population concentration. Interestingly, this paper was presented as part of the

Sixth “Nile-2002”<sup>3</sup> conference, when problems of population concentration were becoming apparent. Other topics of this 1998 conference included population growth and impact on water resources, besides eight other themes, such as participatory approaches in water management, community and women’s roles, the role of technology, and raising efficiency of water use (for details see Tvedt 2000:413). None of the five works focuses on the current Republic of the Sudan.

The almost total absence of the theme of population concentration within countries in debates over the Nile water can be attributed to two interrelated “paradigmatic” factors. One is the dominance in international water debate of the realist and rationalist approaches, situated within a “state-centric epistemology”, which hardly allows any margin for “domestic” hydropolitics to surface. The other has to do with the national and international population aggregates’ “paradigm”, which focuses primarily on total populations of countries, regions or global population. Both are detailed in chapter 2.

This research, therefore, ventures into what is largely a wilderness – an area that invited exploration only recently (El Zain 2000, 2001, 2002a, 2003; NETWAS 2002). The problem is represented by the fact that ‘the Nile basin countries are characterized by poverty, widespread conflict, and increasing water scarcity in the face of *growing water demands* due to *increased population density* and growth. Five riparians are among the ten poorest countries in the world’ (NETWAS 2002, italics added). Rather than an increase of population *per se*, it is population concentration that seems to invite problems of water scarcity and is, therefore, worthy of due attention. Elsewhere, in the River Jordan Basin, a FAO senior population officer, Alain Marcoux (1996) drew attention to what he considers an important factor in association with water scarcity, the ‘geographical distribution of population’. He notes that ‘while domestic needs are intrinsically modest (a few cubic meters per person per annum) the *concentration of population* through urbanization has created problems – this is the case in the Amman-Zarqa area where some 60 percent of the national population are concentrated’ (italics added). In the Nile Basin, we claim here, it is population concentration that generates water scarcity and spurs conflicts at the domestic level and which ultimately reshapes the international conflict over the waters of this river.

Recent debates on the hydropolitics of international rivers have paid due attention to sub-regional and domestic water disputes along these rivers as the major cause of international tensions (see Nakayama and Jansky, forthcoming). Realising that such disputes are indeed important for understanding the dynamics of international river basins, this research explores the domestic water demands in the Sudan by investigating the social effects of environmental scarcity. The latter are manifest in a condition of chronic food insecurity, the consequent

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3. Nile-2002 refers to a series of conferences which started in 1992 and completed in 2002 and which engaged all Nile riparians (Chapter 10).

population displacement, disruption of institutions and social relations, and the often ultimate consequence of population concentration along river banks. In so doing, the research explores hydropolitical dynamics at two levels. Firstly, at the domestic level, it looks at the changing relationship between the RZ and NRZ in the Sudan. Secondly, it investigates the change of Sudan's attitude towards its Nile co-riparians, particularly towards the two major contestants for Nile waters, i.e. Egypt and Ethiopia. It investigates the extent to which Sudan's recent change of attitude is a consequence of the domestic dynamics it is experiencing.

The voluminous research on Nile hydropolitics has remained largely driven by international security issues. It therefore has, so far, paid scant attention to dynamics at countries' domestic level. Important aspects of these dynamics are the "social effects of environmental scarcity" – their impact on the relations between the Nile (the valley, or, as we suggest here, the RZ) and the landscape surrounding it (the NRZ). Though the relationship between the RZ and the NRZ is complementary, especially in that both the "RZ" and "NRZ" make up the national territory of every Nile riparian, little attention has been paid to this relationship. "Population concentration" in the RZ as a cause of "food insecurity" – both, as pointed out above, being social effects of environmental scarcity – has now become a pressing phenomenon. In our understanding, the phenomenon of population concentration generates water scarcity in so far as it takes place along the banks of the Nile and its tributaries (i.e. in the RZ), leading to an increase in demand for water there and thus asserting new domestic agendas. What makes the effect of population concentration more precarious is that it is both recent and rapid. As such, besides creating water scarcity, it paralyses states' efforts to cope with it and threatens unpredictable dangers. In the long run, if the regime of environmental scarcity remains, population concentration will reproduce water scarcity by affecting the quality of the water through pollution of the river.

Interestingly, whereas population increases have been thoroughly discussed in studies of international rivers, as causes of water scarcity, population concentration, being partly an outcome to these population increases, has received scarce attention. Where it has been the subject of study, attention has been devoted to population concentration in urban areas. Concentration of population in rural areas on a larger regional scale, however, has remained almost completely outside the debate. Studies on the Nile Basin, save those on Egypt – almost taken for granted as a historical case of population concentration – seem to consider population concentration irrelevant in both the urban and rural areas of the RZ. This negligence, probably, can be attributed to the fact that population concentration, as a problem in the Sudan and other upstream countries, did not crop up before the 1980s, and the level of urbanisation remained low and movements of population on a regional scale were not conceived of as leading to large permanent settlements in the RZ. In fact, only in the 1980s did the Nile Basin region begin to witness rapid "urbanisation" and a pressing regional population concentration, which effectively entered the scene as a multidimensional problem. Yet

far-sighted policy in relation to the Nile water would not have let these trends pass unnoticed, given that about two decades have already elapsed since the pressing population concentration in the RZ became manifest.

While food insecurity in connection with Nile water has received some attention – being the pretext for the riparians’ current contest for more water for irrigation – population concentration has remained a lacuna in studies on the Nile. Reasons for this, in our view, have to do largely with over-emphasising the macro-developmental irrigation and water management aspects at the national level and at the inter-state level, emphasising competition and/or conflict and therefore essentialising the engineering, political, and legal aspects. Roughly speaking, of the 459 most relevant entries in Tvedt’s annotated bibliography, noted above, 193 (42 per cent) were about water-supply augmentation, irrigation, and water management, largely at the national level, and 96 entries (21 per cent) about legal, cooperation, and conflict aspects largely among riparians. Research is thus implicated in a zero-sum perception in association with allocation of Nile water. Especially the warnings about war, noted at the beginning of this chapter, tend to provide partial information, which often leads to an empiricist reading of the contours of the Nile Basin and its resource dynamics. In our viewpoint, such research contributes to generate a highly politicised situation. Significantly, this context of essentialising inter-state competition and/or conflict has a high tendency to disguise environmental risks and their consequences by over-dramatising the problem of *water allocation* and neglecting the impacts of the *use and control of water* by dominant groups in the RZ on those groups inhabiting the NRZ. In fact, among the 459 most relevant titles referred to above, only 20 (4 per cent) dealt with environmental issues, including only four entries on floods, although the latter devastated many communities in the Nile Basin at different intervals in history. In most studies on the Nile what counts, actually, are the river (surface water) and its narrow valley (irrigated lands), *not* the wider environment surrounding the river and its diverse components. In this respect, research has dissociated the RZ from the NRZ though nationals of a Nile riparian are legally entitled, at least theoretically, to move freely throughout the national territory and settle anywhere, in the RZ or NRZ. Yet despite the intricate interactions between the RZ and the NRZ in each riparian, no serious scientific investigation of such interactions has been conducted so far.

The aim of this research, therefore, is to respond to this new challenge of population concentration in the RZ by exploring its dynamics on the ground at the *domestic* level in the Sudan. More precisely, it traces causes of food insecurity in the NRZ, as a cause of mass displacement, where the latter has caused population concentration in the RZ. The concentration of population in this zone in turn induces food insecurity there and necessitates expansion of irrigated areas to meet food needs. The point of departure of this research is the interactive impacts between the RZ and NRZ (i.e. the dynamics taking place within the national territory as a whole) rather than being confined to dynamics in the RZ, or the Nile

Basin in the Sudan, which characterises the bulk of research conducted so far. In our understanding, no factor is likely to provide a better reading of the interactions between the RZ and NRZ than population migration/displacement and the consequent population concentration. This research sees that a “population problem” in connection to food security, as in relation to the Nile water, is being explained *temporally* by over-emphasising the aspect of population *increase* and not *spatially* by figuring out the trends of population redistribution/population *concentration* and how they reshape the landscape. Most researchers, if not all (see, e.g. Postel and Peterson 1996, Falkenmark 1989 (earlier writings)), view it in terms of growth in total numbers of population, *not* in terms of concentration of population; and necessarily not in relation to the uneven population redistribution trends in the Nile Basin.

### 1.3.1 Research scope and area of focus

Water scarcity can result from a multitude of causes. However, the focus of this research is on the environmental processes; namely, the impact of environmental scarcity (i.e. the social effects caused by environmental scarcity) on the Nile water at the domestic level in the Sudan and how this has affected Sudan’s relations with Nile co-riparians, particularly Egypt and Ethiopia, and how it heralds a new regime for the whole Nile Basin. However, antecedent conditions and other intervening factors that, simultaneously, interact with and reshape these social environmental effects are of significant importance to better understand dynamics around Nile water. Thus, this research extends to investigate the socio-political processes shaping spatial relations and their impact on the relationship between the downstream RZ and the NRZ and upstream RZ, i.e. that between the groups that “own” the downstream river banks and those who “inhabit” the expansive landscape of the NRZ and the upstream RZ. These processes include macro-political/administrative regulations and economic policies, as well as their impact on localised food insecurity, leading to localised displacements, and together leading to regional displacement (i.e. to the RZ, causing food insecurity in recipient areas of this zone).

Therefore, this research investigates the development of the political system in the Sudan in the period 1820–2004, essentially in association with Egypt’s strategies of controlling the Nile and making it an “Egyptian river”. It is important to emphasise that the carving out of Sudan’s territory itself is associated with Egypt’s control of the Nile (Chapter 3). In this respect, our concern extends to investigating how the coercive centralisation process annexed expansive regions (both NRZ and upstream RZ) to the Nile Valley (downstream RZ), reshaped resources and population distribution, and contributed to depopulate certain regions of the Sudan. It reflects discriminative land-tenure systems and land-use policies adopted by centralised political systems. Most importantly, it investigates how these processes contributed to create a “political coalition” that

through control of water and of benefits from public facilities related to water came to dominate both political and economic power in the Sudan from the early twentieth century until today. Closely connected to the political development, the research discusses the state's authoritarian economic development and how it reinforced "resource capture" or expropriation of farmers' and pastoralists' lands in the period 1820-hitherto, to the benefit of groups empowered by use of Nile water. Resistance to this expropriation has made communities of pastoralists and traditional farmers important actors on the Nile hydropolitical scene. The expanding state power, how it marginalised these actors, and how they have fought back are, therefore, analysed.

The disturbance in food production patterns and population distribution, leading to population concentration, are studied in relation to two main interrelated factors. One is the state's legitimating expropriation of the land of traditional farmers and pastoralists and the other is the creation of an economic core – the semi-arid (central) RZ. These two factors have, for several decades, induced food insecurity and both voluntary and involuntary migrations of large groups of population from one region to another. "Resource capture" or expropriation of communities' lands, which continues until this date, has resulted in "ecological marginalisation" – pushing large groups of population onto marginal lands and, therefore, contributing to the severe environmental degradation of these lands. The scope of this study, thus, covers localised forms of displacement and conflicts (Chapter 4), viewed in closer association with incidences of drought. The ongoing civil war in southern Sudan to which the drought conditions have contributed, triggered yet another mass population displacement by replicating the impacts of droughts in northern Sudan.

Movements of NRZ and upstream RZ inhabitants indicate a "shift" of population weight to new crop zones – from wetter rainfed zones to arid irrigated zones. This shift merits closer investigation. However, besides this demographic shift, population movements represent a socio-cultural displacement associated with the source of water. Current trends of population concentration have radically transformed the ethnic composition of the RZ. Population groups from southern and western Sudan, whose movements into the RZ were for decades subject to restrictive measures, now make up the majority in the capital of Khartoum and in pockets elsewhere in this zone. The new political weight of the immigrants and internally displaced persons (IDPs) from the NRZ and upstream RZ has brought significant pressure on governments seated at the confluence of the Niles; in fact, rendering them vulnerable to political and security uncertainties. The extent to which it may lead to an increase of the irrigated area cultivated with grains warrants investigation. Thus, the scope of this research extends to the rising ethnic assertiveness of the IDPs' ethnic self-help associations, which helped them bargain and win the "right" to settle in the RZ.

The research scope extends to involve regional and global dimensions. Apart from the immediate burden that population concentration places on Nile waters at

the national level in the Sudan, it has political repercussions manifest in changes of the population-political contours. These alter the Sudan's attitude towards downstream and upstream. In this regard, Sudan's relations with Egypt and Ethiopia are especially emphasised, especially the extent to which they aggravate conflicts in the Nile Basin or, otherwise, promote cooperation among riparians and allow Sudan to pursue its water supply increase policies. In this sense, it presumes that at least some of the Nile riparians, if not all, are experiencing environmental scarcity problems similar to those of the Sudan.

### 1.3.2 Research questions

The principal question of this research is as follows:

*How has control of the Nile and the use of its water reshaped the polity and economy of the Sudan, and how has this very process contributed to generate water scarcity?*

A number of sub-questions, organised here in four sets, follow from this principal question. The first and main set of sub-questions comprises three: "What are the processes involved in controlling the Nile?" "Who of the many 'actors' in the Sudan controls and benefits from Nile water?" And, "What measures are taken to secure this benefit?"

The second set of questions revolves around why Sudan, a country that has been considered water-abundant and projected to be so until 2050, at this very moment, is talking about water scarcity? To what extent is this felt water scarcity generated by "social effects" of environmental scarcity in the Sudan, namely food insecurity in the NRZ and upstream RZ and mass displacement/population concentration in the downstream RZ? To what extent has food insecurity brought larger groups of population from the largely rainfed NRZ and upstream RZ to irrigated areas in the downstream RZ? Has authoritarian development contributed to "deplete" the abode of "alternative resources of water" – the rainfed areas? Associated with these are questions about the other impacts of population concentration in the downstream RZ. Do the new *population "contours"*, resulting from mass population displacement and concentration, assert new *political "contours"*, which may lead to change in the composition of the ruling bloc and, therefore, the degradation of the political weight of the groups hitherto benefiting from use of Nile waters?

Our third set of questions relates to the extent to which the current population-political map contributes to reproduce environmental scarcity. To what extent does the change in population distribution lead to disputes over the downstream RZ space? Over the meaning of "citizenship" and disputes over the uses of water therein? Do the new population contours aggravate the "politics of scarcity", lead to shifts in state discourse from development to other-than-development discourses? Does it transform the prevailing "imagined communities"? Do changes in population distribution assert distributional dis-

courses or give meaning to exclusionary discourses of minority-favouring regimes founded on ethnicity and religion?

Finally, a set of questions basically relates to the international hydrogeopolitics of the Nile. What impact do the domestic transformations in the Sudan bear on neighbouring riparians, namely Egypt and Ethiopia? Does the felt water scarcity in the Sudan mean more water supply is needed in the upstream and thus less water flowing downstream at both the national and international levels? Does it imply a call to transform the existing arrangement of sharing Nile waters? Does it mean a change is needed in Sudan's foreign policy? Will transformations in the Sudan lead to more conflicts between this country's downstream and upstream parts and between it and its Nile co-riparians, or will they induce cooperation?

### 1.3.3 Objectives of the research

The principal concern of this research is to understand the changing relationship between the River Nile and its surroundings and how this change has, historically and currently, determined water abundance or scarcity. As part of this, the overall research objective is to describe a problem, or, in fact, a new challenge, namely that of population concentration in the RZ, and to contribute to explaining and interpreting the causes behind it and to advance some recommendations for overcoming these causes. While these may be concerns to policy-makers in particular, the research arguments address the wider Nile audience in the hope of stimulating public discussion and of problematising the prevailing knowledge about the Nile in the Sudan and the relation of the latter to its two prominent neighbouring co-riparian states, Egypt and Ethiopia. In light of this wider objective, this research pursues five specific objectives.

Firstly, by depicting the impact of environmental scarcity on food security and population distribution, this research aims to explore and develop insights about the interactions between the RZ and the NRZ in the Sudan. Through "process-tracing", it studies the processes leading to food insecurity and the related processes of population de-concentration/concentration in the period from 1820 to 2004. Specifically, it aims to figure out the extent to which population concentration trends signal the reversal of a "millennial" pattern of population movement. More precisely, it aims to figure out whether the current population distribution trends cause a shift in population density from the largely millet/cassava crop zone (in the NRZ and upstream RZ) to the largely wheat/irrigated sorghum crop zone (in the downstream RZ) and what are the implications of this shift for the Nile waters. In this regard, this study essentially explores the resource dynamics in the NRZ and upstream RZ. Against a presumed abundance of resources, therefore, and a "normal" pattern of population distribution in the Sudan, the research brings to light the incredible changes and population movements that have transpired between the downstream RZ and the NRZ/upstream RZ as well as within each of the zones.

Secondly, the research examines the new hydropolitical challenges in the Sudan resulting from the above shift, and it demonstrates potential conflicting positions arising from the scarcity condition: RZ versus NRZ, upstream RZ versus downstream RZ, and semi-arid downstream RZ versus the arid downstream RZ to the north. It investigates the extent to which this condition may lead to re-defining accessibility “measures” to resources in the downstream RZ (including accessibility to Nile water) for NRZ population groups, heralding a new regime of water control/utilisation in the Nile Basin.

Thirdly, given the nature of the Nile as an international river and the role of the riparian states in relation to such a river, this research places the social effects of environmental scarcity in the Sudan in the context of the larger Nile Basin. In this respect, the study detects whether relations between Sudan and Egypt on the one hand and Sudan and Ethiopia on the other in fact reflect responses to environmental scarcity and whether this has contributed to the creation of the celebrated Nile Basin Initiative, which calls for genuine collaboration among the Nile Basin countries.

Fourthly, through in-depth investigation of problems on the ground, the research aims to come up with suggestions for policy-makers on how to overcome the water scarcity generated by population concentration. In particular, it provides suggestions on how to engage rural populations in the processes of rehabilitation and resettlement in the rain-belt zones (NRZ) in order to lessen pressures on the scarce Nile water and to regain the rain waters.

Finally, bearing in mind the overwhelming quantitative concern with the Nile, this research hopes to contribute descriptions/interpretations – qualitative data – to the Nile hydropolitics scholarship. Essentially, it aims to determine contextual factors (intervening and interacting factors) that reshape the quest for water and, therefore, generate scarcity or abundance. In this respect, by drawing attention to the rapid population concentration in the RZ, it serves as an “early warning” about this phenomenon, which it sees as the major cause of food insecurity and, given the persisting erratic nature of rainfall, the major cause of future scarcity of the Nile waters. The ultimate goal is, therefore, to diagnose the ills that have haunted the Sudan with instability and blocked advantageous cooperation between this country and Egypt and Ethiopia.

### **1.3.4 Research arguments**

Our principal thesis gives prominence to political and socio-economic factors in generating water scarcity. Thus, unlike the demographic thesis, which associates demand for water with population increase (Chapter 2), we argue here that Sudan’s demand for Nile water has been a function of political and socio-economic changes which maintained it low at one time and caused its rapid increase at another. It is excessive power, which since the early nineteenth century has operated to the benefit of the Nile Valley (the downstream RZ) at the expense of other regions in the

Sudan, which defines, historically and currently, the abundance/scarcity of water. In other words, the power acquired by actors who inhabit the downstream RZ, helped relieve the river of pressure and acquire resources from remote regions (the NRZ and upstream RZ) to overcome emergent scarcity in the downstream RZ. It also unfavourably increased demand for Nile water by attracting groups from the NRZ and upstream RZ who target the niches for concentrated economic development in the central RZ for labour and settlement.

Demand for Nile water in the Sudan remained low, i.e. there was no felt scarcity, for a long time because of a combination of four factors mediated by the power the Nile Valley acquired in interaction with its surrounding regions. Firstly, historically, the existence of restrictive centralised political systems characteristic of the Nile Valley confined “ownership” of riverain lands to Nubian communities and, as a corollary, discouraged or prohibited settlement of immigrants, especially nomadic tribes. Secondly, the *perceived* “open frontier” – the expansive plains to the west, south, and east of the Nile Valley, i.e. in the NRZ and upstream RZ – historically absorbed groups out-migrating from the Nile Valley and, hence, relieved the river of the stress they might have caused. Thirdly, the Nile Valley itself served as a corridor for invading armies. These armies “dispossessed” from lands and pushed large groups of water users away from the Nile’s banks. Finally, the adoption of legal (tenure) regulations at the beginning of the twentieth century protected Nile Valley lands as “privately owned” by riverain farming communities and rendered the larger remaining landscape as “state-owned” lands. These regulations, we presume, in association with excessive power of the ruling groups seated at the confluence of the Niles, left this landscape an “open frontier” for the state and state-backed groups to acquire its resources. Expanding state power reinforced the tide of population moving out of the downstream RZ and regions adjacent to it into this “open frontier” of the NRZ and upstream RZ and was reciprocally reinforced, later on, by the population dynamics in that arena. This established an entrenched “frontier-cast ideology”, which saw in the NRZ and in the upstream RZ a wilderness ripe for colonisation. Implicitly embedded in this is the claim that Sudan enjoys limitless “alternative water resources”, housed in the “open frontier”, which also at one level define Sudan’s demand for Nile water in relation to Egypt. In fact, ‘in the negotiations leading up to the 1959 agreement, the Egyptians argued that the Sudan had a *major alternative to Nile water* because of its relatively high rainfall (Egypt has no rainfall worth speaking of)’ (Waterbury 2002:43, italics added). Today, demand for Nile water is peaking, with a felt scarcity already emerging, as featured in official and independent pronouncements. The felt scarcity is precisely because of the blocking of the “open frontier”, resulting from the collapse of subsistence economies of its inhabitants and their staunch resistance to and “liberation” of their ancestral lands from the control of ruling elite. The currently felt scarcity of water is being associated with the quest to meet vital needs, frequently couched in

the now-entrenched food security/insecurity discourse. This is embedded in five arguments, which are at the heart of this research.

Firstly, authoritarian development in the Sudan, through “resource capture” interventions, generated large-scale “ecological marginalisation”, which has accelerated the rate of desertification and the recurrence of droughts, civil war, and tribal conflicts, finally leading to disturbance of the water partition, collapse of subsistence economies, and the blocking of the “open frontier”. Localised displacements and localised conflicts resulting from the collapse of subsistence economies have led to displacement and conflicts on a regional scale. These have induced mass population displacement from the NRZ and upstream RZ to the downstream RZ, leading to rapid population concentration in the latter. Authoritarian development, in this respect, has generated the risks that have “depleted” the “alternative water resources” and ultimately contributed to generate water scarcity in the downstream RZ, namely for meeting food needs through irrigation.

Secondly, though the Sudan has a water quota specified in its 1959 agreement with Egypt (and that quota has always been used in the development of the downstream RZ), water scarcity has now arisen because of the resettlement of “extra” population moving out of the rain-belt zones into the irrigable areas of the downstream RZ. We say “extra” because these populations had historically sustained their livelihoods in their dispersed settlements in the rain-belt regions, and therefore were not using the Nile waters. Rather, they were dependent on Sudan’s “alternative water resources” – i.e. alternative to Nile water. Thus, besides the scarcity of the Nile waters that resulted from new consumption patterns and natural population growth in the downstream RZ, the collapse of subsistence economies has added to the severity by bringing population from the NRZ and upstream RZ to the downstream RZ. The concentration of populations on arable lands near the Nile necessitates resettlement, given the degradation of the environment in the homelands of the displaced. Whittington and McClelland (1992:146) argue that ‘population growth will increase the demand for food, and therefore for irrigation schemes’. It is, therefore, natural that the concentration of population in urban areas necessitates large-scale agriculture for food security and other urban needs. It means that producers from the rainfed millet and cassava crop zones are now increasingly peopling the wheat and irrigated sorghum zones.

Thirdly, the change in fortunes of regions in terms of production of food surplus in relation to the regional population distribution patterns is significant in that it asserts new population-political contours. In this respect, the political weight of certain groups is changing, though these groups have been part of the ruling political coalition in the Sudan for some 180 years. Indeed, this ruling coalition’s protection of the Nile Valley as owned by riverain people has informed its position in international hydro-politics. Within this atmosphere, IDPs from the NRZ and upstream RZ have asserted, due to their present heavy weight, their rights of citizenship in the downstream RZ and, therefore, right to benefit from its resources, including Nile water.

Fourthly, the recent transformations taking place in the Sudan (i.e. since the 1980s), largely under the influence of the change in population distribution, indicate a change in this country's attitude towards the other Nile riparians, particularly in relation to securing enough water to meet its new challenges. This change in attitude implies responses from other riparians, depending on how they view the Sudan's new attitude and whether it means gains or losses for them in the Nile hydropolitical game. The Sudan's change of attitude might in fact usher intense conflict between this country and the other riparians; in fact, it did contribute, in 1992, to the *first incidence of bloodshed* between Sudan and Egypt since the latter's wars of invasion and colonisation (1820-85 and 1896-1924) and its punitive campaigns as partner in the Condominium rule with the British. Sudan may ally itself with one or more riparians against another riparian or group of riparians. Alternatively, the Sudan's change of attitude might induce cooperation and progressive integration with these countries.

Finally, with the stark threat of water scarcity, it is this increase in demand that heralds a "new" hydropolitical regime of the Nile water, which can be characterised as one of voluntary cooperative involvement. Sudan appears as the locomotive power shaping this regime.

## 1.4 Methodology

This research is informed by insights from the constructivist perspective, pertaining to the place it gives to the "domestic" and its capacity to explain several types of relationships relevant to the questions posed: relationships and interactions between the components of life in the Nile Valley, namely between those in the RZ (the Nile Valley and upstream RZ wetlands) and those in the NRZ (drylands); interactions within these zones; and interactions between these components together and the outside world (Chapter 2). Insights from this theory may thus help us investigate "transitions" in the Sudan and how they generated water scarcity, how Sudan pursued its water supply augmentation and how this has transformed its relationship with its Nile co-riparians, namely Egypt and Ethiopia. The constructivist perspective provides for a "process-tracing" vision.

Process tracing, being part of the case study methodology, helps us to understand the complexity of control and use of Nile water as well as the processes involved in generating scarcity of Nile water in the Sudan. This is because case studies, in general, serve purposes of 'identifying antecedent conditions, testing the importance of these antecedent conditions, and explaining cases of intrinsic importance' (Van Evera 1997:55). Haynes and Rhodes (2004:8) suggest that to begin with the more distant past helps us to appreciate the richer context in which the organisations we study function. To figure out the richness of any context implies minute details on its components and how they affect each other. 'The fundamental idea of process tracing is to assess causality by recording each element of the causal chain' (Zürn 1998:640).

A primary focus of the current research is therefore the “antecedent conditions” and “transitions” that gave birth to water scarcity in the Sudan. It necessarily aims at testing the importance of these conditions and transitions, and explaining any intrinsic relevance found to be associated with them. ‘In process tracing the investigator explores the chain of events of the decision-making outcomes. The cause-effect link that connects independent variable and outcome is unwrapped and divided into smaller steps; then the investigator looks for observable evidence of each step’ (Van Evera 1997:64). This research deals with an intricate chain of cause-effect relationships. These are present in the processes of centralisation and the associated authoritarian development (which reshaped the national polity and economy of the Sudan), in the regime of environmental scarcity, and in the consequential collapse of subsistence economies. These together, leading to population concentration, present another intricacy, as manifest in a presumed water scarcity: the shift in state discourse and the change in Sudan’s attitude towards the Nile water. This in turn affects Sudan’s relations with the other Nile riparians. Unravelling and comprehending the “social effects” of environmental scarcity within the above chain necessitates a “process tracing”, which allows us to see both the role played by environmental scarcity in certain conditions and the difference it impinges on societal dynamics.

In environmental studies, process tracing, according to Schwartz *et al.* (2000), allows the researcher to see both the role played by environmental scarcity in a certain context and the pressure that environmental scarcity may exert on societal dynamics. It therefore gives researchers a better chance of dealing with complex interactions of different components and factors. Clearly, this is not a linear procedure though. The latter is risky because pursuing additive relations would not only portray a “system” as the composite of its numerically summed components; but it would also block us from discerning the layers beneath (for details see Schwartz *et al.* 2000:88). ‘That so many researchers treat the relationships among variables in social systems as additive does not reflect the reality of these systems. Rather, it reflects misguided attempts by researchers to avoid dealing with the reality of the *complexity* of these systems’ (Schwartz *et al.* 2000:88, italics original).

Thus, this research utilises “process tracing” in order to explore two dimensions. One is *spatial*, i.e. the relationship between the Nile and its surroundings. The other is *temporal*, namely the evolution of this relationship. These two dimensions allow us to visualise the trends in population distribution/redistribution with regard to the two scales of the RZ and NRZ and the changing power relations and technologies of control/prohibition associated with them. Thus, to comprehend the social effects of environmental scarcity, particularly in association with population concentration in the Sudan, a trend analysis is conducted which uses quantitative data (available statistics) to calculate the scale of population movements into and out of the RZ. To this end, we adopt the common population geography method of ranking regions and towns in terms of their population and

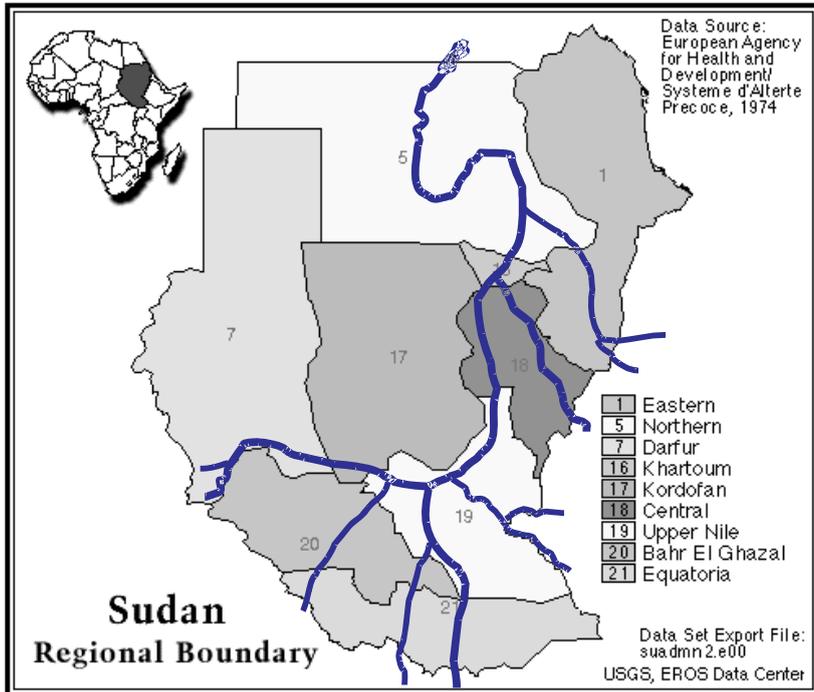
calculating their proportional increase. This becomes meaningful if antecedent conditions are clearly identified for the period under study, i.e. 1820-2004.

The choice was made for 1820 as the begin year of the period under study because this was the year when the current Republic of the Sudan started to take shape. However, most importantly, this was the year when we first started to witness an “international” hydropolitical interaction along the Nile River – the wars of Egypt against Sudanese kingdoms with the aim of controlling the Nile and making it an “Egyptian river”. Although ‘the Egyptians have, since ancient times, often undertaken military expeditions with a view to controlling the source of the river and securing the supply of water to their region’ (Dagne *et al.* 1999:226) it is during the above-mentioned period that *hydropolitical* discourses came to the fore. Beginning in 1820, dynamics became perceptible that generated political alliances with the aim of controlling the Nile, at the same time reshaping Sudan’s internal dynamics, “competition” and/or “conflict” over water and/or the call for “cooperation” among the Nile riparians. John Waterbury (2002) considers the question of controlling the supply of Nile water to have begun in the last one and a half century and divides this period into four regimes: a regime without a hegemon (prevailing through most of the nineteenth century), a quasi-hegemonic authority (in the first half of the twentieth century), a Cold War regime (the period 1945-89), and a basin-wide, voluntary cooperation regime (1989-hitherto). We shall consider a fifth regime, chronologically before these, referred to in a generic form as the “millennial regime”. This covers the period from the end of the third century up to the second decade of the nineteenth century.

Waterbury’s “periodisation”, starting in 1850, is useful with regard to the larger Nile Basin. With reference to the Sudan, we need to begin in 1820, as changes associated with the control of the Nile started in that year when the Turks invaded the Sudan. The year 1820 also marks the introduction of centralised political systems, some form of “modernisation”, and witnessed the pushing away of large groups of population from northern Sudan, the repercussions of which reshaped the history of the Sudan so dramatically. This is a transitional period, which prepared the ground for political alliances, enriched some actors and impoverished others, and largely defined the processes of environmental scarcity which were to follow. Thus, the first regime is considered to cover the period of Turkish rule, i.e. 1820-85, as well as the Mahdist period (1885-98). The following periods coincide with the British rule (1898-1956), post-independence (1956-89), and post-Cold War (1989-2004). The “millennial regime” (pre-nineteenth century) represents an antecedent condition, the study of which is necessary to figure out, comparatively, the magnitude of transformations following it under the various regimes of water-supply control.

In order to figure out empirically the social effects of environmental scarcity in different antecedent conditions (regimes of control), the incidence of population concentration will be used as indicator. To examine whether there is population concentration along the Nile and its tributaries, the nine regions of the

Figure 1. 2: Administrative regions and RZ and NRZ in the Sudan



Note: Nile system added to the map by the author.

Source: USAID (1974).

Sudan,<sup>4</sup> according to the 1980s administrative divisions (Figure 1.2), will be correlated to the two domains of RZ and NRZ. This choice was made because earlier statistics on population are given for the nine larger regions, which were later frequently being re-divided until they settled lately at 26 “states”.

The Nile system spreads through all nine regions in the Sudan. In fact, 79 per cent of the Sudan’s territory lies inside the Nile Basin (Table 1.4). The division into RZ and NRZ is based on whether a region’s inhabited and irrigable territory lies predominantly in either zone. Accordingly, the RZ embraces the three arid and semi-arid administrative regions of Northern, Khartoum, and Central; the bulk of their population dwell in the vicinity of the Main Nile, the Atbara, the Blue Nile, and the White Nile. It also includes the three wetter regions of southern

4. Since 1820, when it is partly being carved out, Sudan’s territory had been subject to continuous administrative designations, where administrative units differed in number from period to another and fell under different names such as “province”, “region”, “state”, etc. In this research we shall refer to administrative units as regions and we shall confine to the 9 regions existing in early 1980s. Noteworthy here is that borders of these administrative regions have changed slightly in different times; however, we do not have adequate available information about these changes and the population groups involved in the re-divided territories.

Sudan (Bahr El Ghazal, Upper Nile, and Equatoria), where rivers and streams pouring into the Nile system intersect the largest part of the territories of these regions. The lengthy RZ is further divided into the (wetter) upstream RZ (the three southern regions) and the downstream RZ to refer to the three northern RZ regions. The downstream RZ is yet further divided into the arid RZ (Northern Region) and the semi-arid central RZ (Central Region and Khartoum).

The NRZ includes the regions of Kordofan, Darfur and Eastern; with about 1 per cent, 8 per cent, and 18 per cent of their territories, respectively, lying inside the RZ.<sup>5</sup> The nine regions in the Sudan are currently being divided, as noted above, into 26 states (16 in northern Sudan and 10 in southern Sudan). It is important to clarify here that by RZ we mean the RZ of the *Nile*, and *not* the RZ of other rivers in the Sudan. In connection with the latter, the Sudan is riparian of four watersheds in addition to the eastern desert strip extending into Egypt and the portion of the western desert extending into Egypt, Libya, and Chad.<sup>6</sup> These four watersheds are the Baraka River shared with Eritrea and the Gash River shared with Eritrea and Ethiopia, the Lotagipi swamps shared with Ethiopia and Kenya and Sudan's share in Lake Chad Basin (UNEP 2002:27). Thus, these four watersheds (with their own riverain zones) are non-Nilotic and, therefore, not included in what we designate here as the RZ – they belong to the NRZ in the Sudan together with areas in the Sudan that are not adjacent to Nile and its tributaries. The largest share in international basins among them is the Sudan's share in Lake Chad Basin with an area of 82,800 km<sup>2</sup>, i.e. 3.5 per cent of total basin area (UNEP 2002:35) and the smallest is its share in the Gash Basin with an area of 9,600 km<sup>2</sup>, i.e. 24.1 per cent of total area) (UNEP 2002:31).

With regard to the two areas, the "RZ" and the "NRZ", in- and out-migrations will be detected and trends calculated. For the larger part of the twentieth century, but only in general terms for the period before it, these population movements will be distinguished in relation to whether they target the rural RZ or the urban part of the RZ. In relation to the latter, the growth of urban areas and the increase in number of new towns is examined and compared using the simple method of percentage increase. Similarly, a comparison will be drawn between the level of population concentration in the upstream RZ and downstream RZ.

The concrete population data need to be qualified for a better interpretation and understanding of the real causal mechanisms. This is what we refer to as a "process tracing". Thus, in our understanding, inquiring into the facts surround-

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5. The indicated portions of these regions are based on my own estimation using different maps, including the National Atlas of Sudan (MoE 1987:4) and Britannica Atlas (Cleveland 1990). The 1%, 8% being riverain in Kordofan and Darfur regions are in connection to the Nile's tributary of Bahr Al-Arab, which flows across the southern parts of these two regions. The 18% in the Eastern Region is in connection to the Atbara River, which crosses this region. Non-Nilotic rivers in the Eastern Region are excluded.
  6. The desert extensions are intersected by a number of seasonal wadis (valleys) such as Wadi Odib in the eastern desert (between the Nile Basin and Red Sea) and Wadi Hawar in the western desert (between the Nile Basin and Lake Chad Basin).

ing the social effects of environmental scarcity and their impact on Nile water necessitates a historical analytical comparative method, both in time and in space. While we look sharply at the impacts of environmental scarcity we shall, at the same time, contextualise and relate them to main causes and intervening factors in each of the five regimes (epochs) noted above.

The ultimate social effect of environmental scarcity, namely food insecurity and population concentration will be comparatively studied. The processes of “administrative centralisation”, “building of political alliances” in association with water use, “authoritarian development” and the associated “resource capture” and “ecological marginalisation” are discussed as the conditions, major driving forces, and intervening factors that shaped food security/insecurity and population distribution.

#### **1.4.1 Methods of data collection**

This research relies heavily on written materials. These include published materials, grey literature and Internet sources. In the last couple of years, the political events in the Nile Basin and in Sudan in particular have lined up in a dramatic manner, reflected more in popular literature than in scientifically articulated books or journal articles. Hence, for this period, there is significant reliance on newspapers, both ordinary and online.

Available statistics, which are analysed in this research, involve population statistics and food production figures. These statistics are gathered from government, United Nations, and other agency sources. The major source of population statistics is the national censuses of the Sudan (1955/56, 1973, 1983 and 1993), and other official documents issued by the Department of Statistics and the Central Bureau of Statistics/Ministry of Finance of the Republic of the Sudan. Except for the fact that they are incomplete for some regions (namely southern Sudan) these government statistics are reliable to some degree, especially that there are no other adequate alternative sources. Estimates of population in the period before the Sudan’s first population census of 1955/56, going back to the nineteenth century, are collected from different sources, including compilations by individuals available on the Internet. Like other estimates, these compilations reflect population figures that can hardly be judged as reliable for a country such as the Sudan – expansive and afar area for “estimators” of the time to conceive of.

#### **1.5 Organisation of the research**

Apart from this introductory chapter, this research is divided into 10 chapters followed by a conclusion. Chapter 2 places the “domestic” in international hydro-political debates and details the main discourses on water scarcity with the aim of understanding the causes of water scarcity and the relationship between the river and its surroundings.

The six following chapters, from Chapter 3 through to Chapter 8, detail the dynamics in the Sudan that are associated with generating water scarcity/abundance. Thus, Chapter 3 traces the processes that led to annexation of different watersheds to the Nile Valley, leading to the creation of a political and economic centre, the “central RZ”. Intrinsic to these processes, we shall trace how the ruling elite seated in this central RZ effectively used the Nile water resources to empower themselves, capture more resources, and marginalise the large majority of the Sudanese people living in the NRZ and the upstream RZ. Chapter 4 details the processes which led to environmental scarcity, namely the magnitude of “resource capture”, “ecological marginalisation”, and the consequent droughts and desertification and conflicts taking place at the local and regional levels and the consequent disintegration of social relations.

Chapter 5 elaborates on one of the social effects of environmental scarcity, namely deterioration in production and productivity of cereals and associated famines and food shortages. It is concerned with showing how the strategy of finding “alternative sources of water” – i.e. alternative to Nile surface water, in the rain-fed sector – failed and how the NRZ food-surplus regions have now become dependent on RZ regions for their food.

While chapters 4 and 5 discuss the major reasons behind population concentration, chapters 6 and 7 address the magnitude of this population concentration on a regional and urban scale, respectively, and Chapter 8 portrays the pressures it has caused and their translation into irrigated agricultural policies. Chapter 6 focuses on another social effect of environmental scarcity, i.e. population displacement. It is guided by the question of whether there is a historical pattern of population movement in relation to the downstream RZ and whether this pattern has been maintained or is being reversed. The chapter studies the reality of population concentration by figuring out the migration trends and displacement incidents and their directions and portraying their magnitude in the RZ. Chapter 7 details the same processes discussed in Chapter 6, however, this time in relation to urban areas. It primarily investigates the degree of population concentration and increase in number of towns in the RZ.

Chapter 8 discusses the implications for the Nile waters of the pressures discussed in the previous three chapters. It addresses government measures to protect the downstream RZ from the intrusion of groups from the NRZ and upstream RZ and details how these groups resisted such measures and claimed a space for themselves in the downstream RZ. It elaborates on the food security discourse and on government irrigation policies that led to a dramatic increase in use of Nile waters in the Sudan and how this has generated potential conflict between the downstream RZ and the upstream RZ. Augmenting irrigation water from the swamps has become an urgent need for which aggressive policies were pursued, including jihad. Food security has become one important mobilisation factor.

Chapters 9 and 10 address how the changes in the Sudan have affected its relations with its most strategic neighbours and other Nile riparians, generating a new formula which has allowed the Sudan to pursue its water augmentation interests

further and further. Chapter 9 makes the connection between the transformations at the domestic level in the Sudan in the 1980s and 1990s and the change in the Sudan's foreign policy, specifically in relation to Egypt and Ethiopia, the two keenest contestant riparians, between which the Sudan is sandwiched, and being the major consumer and major source of Nile water, respectively. Chapter 10 examines the transformation resulting from environmental scarcity, especially in connection with Sudan's relations to Egypt and Ethiopia and discusses whether this transformation represents a driving force at the regional level. It specifically examines whether this transformation contributed to emerging conditions leading to the new cooperative framework of the "Nile Basin Initiative".

Chapter 11, drawing from the discussion of previous chapters, suggests development priorities for "regaining" the rain waters as well as water augmentation and virtual water exchange. Chapter 12 concludes the thesis, underlining the main findings and suggesting potential areas that future research may consider and some practical policy recommendations.



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## 2 Environmental Scarcity and Spatial Relations in River Basins: Theoretical and Conceptual Framework

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### 2.1. Introduction

Conflicts over river water do not occur everywhere, at all times. Geographical, political, economic, and cultural differences between communities in one nation, between nations, or between regions have defined the degree of hydropolitical interactions. Especially in arid and semi-arid regions and where water is scarce or made to be scarce for one reason or another, it can truly become a source of contention. John Waterbury (2002:13) notes, 'It is in the semi-arid tropics that surface irrigation is most widely practiced and where competition in transboundary basins is likely to be most intense' (see also Falkenmark 1997:30, Nakayama 2003). However, even in temperate regions water can be a subject for rivalry. The 'words river and rival in fact have the same root, *rivus*, meaning stream in Latin, from which is derived *rivalis*, which means sharing the same stream' (Ohlsson 1995:23, Waterbury 2002). Being the "elixir of life", water is essentially different from all other natural resources. 'It has always been recognized that water is *casus belli*. If we are deprived of it there is no ready substitute. If we are deprived of it long enough, we die' (Waterbury 2002:10, see Wolf 1995).

A large body of literature on conflicts over water resources is now flooding the scientific and policy arena, contributing to understanding of the problem, constructing new problems, and in some ways, part of this literature is causing problems to societies which have been portrayed as water scarce or expected to undergo water scarcity. Debates on water scarcity have significant implication for human societies' development and well-being. Covering various issues ranging from drinking water to water for ecosystem services, these debates reshape local and national economic policies and influence international investment and cooperation. Classification of a country as water scarce may discourage investors, therefore, negatively affecting its economic development.

Recent debates on hydropolitics of international rivers centre on two main questions. Firstly is whether conflicts over water arise from inter-state or from intra-state competition. Secondly is whether conflicts are caused by water scarcity *per se*, or, otherwise, by a variety of other factors among which water scarcity might be one. The degree of emphasis on causal effects or causal mechanisms of

conflicts, in association with these two main questions, largely distinguishes approaches to hydropolitics from each other. The debate generally revolves between a “water war” thesis, which projects scarcity of water as a direct cause of inter-state future wars and a counter-thesis, critical of the former and focusing on connections between water scarcity and intra-state tensions, however, viewed in a broader context involving a multiplicity of other factors.

This chapter is divided into three main sections. Section 2.2 seeks to figure out the place of the “domestic” in inter-state relations. It elucidates the general theoretical underpinnings which gave greater emphasis to inter-state issues in previous decades and only recently started to give some attention to intra-state or domestic issues, including conflicts over water. This section discusses two paradigms, one dominated by realism and neo-realism within which “hydropolitics” features merely as an international theme, and a constructivist one, advancing in the intellectual scene and making greater space for domestic hydropolitics in interactions on multiple scales. Mainly in relations to the latter, section 2.3 discusses six perspectives on water scarcity, articulating a theoretical and analytical framework for addressing the question of this research. Against the prevailing emphasis on the physical availability of water, this section brings up the *power* dimension and how positions of actors are defined in relation to river water. Seeking to expand on the same concerns of section 2.3, section 2.4 addresses the relationship between an international river and its surroundings as well as relations between its upstream and downstream. Thus, it focuses on the *spatial* dimension, essentially by seeing how power is played out in association with water. This section discusses the possible “flows” of groups of population towards rivers banks, which may influence spatial relations and explains the legal regime which governs relations between the river and its surrounding dry- and wetlands and between the river downstream and its upstream.

## 2.2 Domestic hydropolitics: theoretical underpinnings

Although ecological stress and its consequences, according to Hans Opschoor (1992:119) ‘may exacerbate tension *within* and *between* countries’ (italics added), it is the latter, i.e. tension between countries, that is often emphasised in studies of international rivers. Tension within a country, mostly between dominant riverain groups and dominated non-riverain ones (as we shall detail in section 2.3.3) is, perhaps, rarely studied. An important question, pertaining as to why this has been the case, is important to address here.

The scholastic debate on international rivers’ water has its focus on the connection of this water to *conflict* and that this conflict is primarily viewed to take place at the *international* level. Gareth Porter (1998:217) classifies conflicts involving renewable natural resources into two kinds: ‘those in which resource depletion is the direct objective of the conflict, and those in which it is an indirect cause’. Fresh water and fish stocks, according to him, ‘are the clearest examples

of renewable resources that have been the direct objective of potentially violent *international conflict*' (italics added). Water, according to Aaron Wolf (1995:89), 'seems to share only the most contentious characteristics with other resources, particularly in the international setting, making analysis of international water conflicts especially difficult'. Conflict over international fresh water is likely because this water is shared among several states, because it is unequally divided and scarce due to regional geographical differences, and because it has the potential of being mismanaged (Dinar 2002:248). It is no surprise, therefore, that '[c]onflict over the shared waters of international rivers has long been of interest to *national security planners*' (Porter 1998:217, italics added). The fact that it is essentialised in the conflict debate, that this conflict is inter-state, and that it is (accordingly) the concern of the national security planners have situated hydrogeopolitics, primarily, at the international scale. Domestic hydrogeopolitical issues, therefore, hardly feature from beneath the opaque cloud of international security.

### 2.2.1 "State-centric epistemology" and essentialising hydrogeopolitics as inter-national theme

Situating water debates at the international scale has to do largely with linking it to security as part of the post-Cold War climate. In the post-Cold War era, two views of security in international relations could be figured, namely traditionalist and non-traditionalist views (Dinar 2002:230-32). Below we shall focus on the traditionalist view, while leaving the non-traditionalist view to be discussed in section 2.2.2.

Central to the traditionalists view is the link between security and military power, stemming from their belief that the international political system is essentially anarchic and, therefore, the state should make military security and survival top every other goal (Dinar 2002:230). 'Based on a realist worldview, the traditionalist argument holds that the nationstate is the ultimate unit of analysis, defending itself in an anarchic, self-help system' (Dinar 2002:230). This has established for a military-centric view of security that hardly allows for anything less than or beyond the "national". Therefore, in the view of traditionalists, 'the move by some scholars to incorporate nonmilitary phenomena into the concept of security destroys its intellectual coherence and makes it more difficult to devise solutions to any of these important problems.' (Dinar 2002:231). Essentialising the *state* as unit of analysis, leading to a military-centric view of security, reflects, in fact, a more entrenched worldview – a "state-centric epistemology", which hardly leaves any chance for the "domestic" to surface as a scale, as expression of power and conflicting interests.

A 'state-centric epistemology', in the view of Neil Brenner (1999:46), has characterised not only political science and the sub-fields which directly focused on state-level processes, but also stamped other social sciences, including sociol-

ogy, anthropology, and macro-economics. It ‘has dominated the modern social sciences since their inception during the late nineteenth century’. Brenner continues:

Not surprisingly, political science has been the most explicitly state-centric among the social sciences. States have been viewed as politically sovereign and economically self-propelled entities, with state *territoriality* understood as the basic reference point in terms of which all sub- and supra-state processes are to be classified. On this basis, the state is viewed as the container of the society, while the interstate system is mapped in terms of a distinction between “domestic” politics and “foreign” relations that reinforces the state’s container-like character as the boundary separating “inside” from “outside” (*italics added*).

Brenner (1999:46-7) characterises as ‘unhistorical conception of spatiality’ the contention of political science noted in the above passage as well as the sociological conceptualisation of ‘society’ and ‘boundaries of social relations’ as ‘socially congruent with those of the *territorial* nation-state’; the anthropological presupposition of ‘a territorialized concept of culture as a localized, *spatially fixed* “community”’; and ‘the *territorialized* national economy’ perception available for macro-economic theorists (*Italics added*). Brenner (1999:47) traces this “territoriality” back to ‘the dissolution of feudal hierarchies in late medieval Europe’ when ‘political space came to be organized in terms of exclusive state control over self-enclosed territorial domains’, which ultimately ‘was institutionalized in the Treaty of Westphalia of 1648’. Brenner (1999:47) continues to say ‘The consequence of this transformation has been the long-term enclosure of political, economic, and military power within a global patchwork of mutually exclusive yet contiguous state territories. The bundling of territoriality to state sovereignty is the essential characteristic of the modern interstate system.’

Since then territorialisation is being the pre-given fact of the international system. It is ‘presented as a natural precondition of social and political existence rather than being seen as a product of historically determinate strategies of parcelization, centralization, enclosure, and encasing’ (Brenner (1999:49)). The water-security link, as conceived by the traditionalists, is inherent in this state-centric epistemology – it is conceived in the region of foreign relations, which reinforces the state’s container-like character as the boundary separating the “domestic” from the inter-state relations.

The water-security link is valid, according to Dinar (2002:248), ‘as long as hydropolitics continues to determine to a greater or lesser extent interstate conflict and cooperation, which in turn affects national, regional, and international security.’ Water for a “territorialised mind”, so to speak, is simply the greatest irritant – it ‘ignores political boundaries, evades institutional classification and eludes legal generalizations’ (Wolf et al. 2003:30). Thus, while it invites vigilant strategists to keenly study it, it implies, too, an unavoidable engagement of the states involved, where the latter are left with only two choices, conflict or cooper-

ation (Dinar 2002:248). It is therefore illuminating to see how theories of international relations addressed these issues of international conflict and cooperation and whether at all they made space for the “domestic”.

Dale Copeland (2000:210-11) identifies three main competing arguments in explaining cooperation over the past two millennia – systemic constructivism, systemic realism, and neo-liberalism. He adds to these arguments what he refers to as ‘a more *domestic constructivist* argument (one that shades into unit-level liberalism)’ (Copeland 2000:211, italics added).

Systemic realism, according to Copeland (2000:211), ‘predicts changes in the levels of cooperation based on changes and trends in the distribution of material power over time, set against a baseline of actor uncertainty about the future’. In fact, for realist as well as neorealist schools, with which the underlying assumptions of the traditionalist school of security mentioned earlier are associated, conflict among states is the norm while cooperation is the exception (Dinar 2002:241). This applies perfectly to how riparian states sharing international water systems interpret the moves of each other. ‘In the context of water, a strategic resource and an essential element of growth, each side remains wary of the other because no riparian wants the other side to gain a relatively stronger position vis-à-vis their shared water resources’ (Dinar 2002:242). Founded on and reproducing mistrust, this attitude ultimately leads to more tensions and reproduce the water-security link, as states’ concerns with maximising their individual benefits would drive them to exploit resources unilaterally; hence their attempt to increase their own security will be seen threatening by others (Dinar 2002:242).

Changes in the balance of power or of a political regime in one or more riparian states, taking effect or expected, may also influence the value of a resource (water) or generate an opportune condition for acquiring more of that resource or making a deal over sharing it (see Waterbury 2002:51). Israel, for instance, started to increase its water consumption as peace with the Palestinians became more likely ‘in order to appear to be using a large volume of prior use water out of which it has to be negotiated’ (Allan 1999a:6-7). Claims of “historical rights” to water can be used to block other water users, regardless of whether this will lead to a lose-lose solution. Water can be used as part of nationalist discourse (see Richards 2002:22), which goes far beyond the technical questions, where competition over water takes economic, political, and ideological forms. This condition pushes water to the forefront and renders it the core position of perceiving the world around a specific society in an arid region. Thus, relations among nations with reference to sharing scarce water resources may involve “hydronationalism” or even “hydroconspiracy”, to use Wolf’s (1995:70) words, as ‘water arouses strong political passions’ (Waterbury 2002:34). In regions like the Middle East, ‘water is ...intimately linked to highly sensitive and potentially divisive issues’ (GCI 2000:7). In arid and semi-arid zones, water involves an emotional dimension, or according to Wolf (1995:113), ‘the emotions of a nation’, where issues of national pride and national security intermingle and make it unfeasible for eco-

conomic analysis to provide solutions. These issues operate as “diseconomies” where what is valuable economically speaking collides with what is valuable for adherents of a “national water ethic” (for details see Wolf 1995:113-14). In this sense, they disguise real solutions at the “domestic” level such as the comparative advantages associated with localised ecosystems. Scarcity of water or for that matter its abundance, therefore, can be caused by a multitude of political and ideological factors than by its physical nature.

Liberalists and neo-liberal institutionalists on the other hand see cooperation as the norm; they attribute its failure to misunderstanding among states (Dinar 2002:242). Accepting the neo-realist foundation of rational actors, precisely their worry about the future, the neo-liberal institutionalists stress the role institutions play, as mechanisms, in reducing the uncertainty that can lead to conflict (Cope-land 2000:211). However, in the final analysis, the neo-liberal institutionalist scholars apparently ‘grant only a limited role to institutions, considering them to be the creation of self-interested states that at most constrain choices and strategies. Virtually ignored is the possibility that the effects of institutions reach deeper, to the level of interests and identity’ (Checkel 1998:328-9) – concrete issues which reshape politics in the real world. Dinar (2002:245) notes that while realist, neorealist, liberalist and neo-liberalist institutionalist theories ‘allow us to gain an initial understanding of the dynamics governing interriparian relations, they ignore compelling analyses that only become apparent when looking at domestic politics’ (Dinar 2002:245).

Why the “domestic” is ignored, therefore, becomes an important question that seeks an answer. Jennifer Sterling-Folker (2000:115) asserts that ‘This antipathy toward domestic political institutions has informed all variants of liberal IR theory, leading critics to repeatedly charge that liberalism contains no theory of politics.’ However, she apparently blames the theoretical heritage of vigorously bounded, territorialised *systems*, which variants of liberal IR theory seem not to break with. Referring to the antipathy toward domestic political institutions, she states that

Liberal theorists cannot be entirely blamed for this, since it was neorealism that popularized systemic theorizing, but such an emphasis is actually conducive to liberal theories of social change. Because liberal theory has always been less an explanation for what policymakers *actually do* and more a prescription of what they *should do*, theorizing at the systematic level allows it to avoid to explain ongoing, empirical anomalies. That is, it avoids having to explain why the identities, interests, and behaviors of policymakers continue to be informed more by the parochial and myopic pulling and hauling of domestic politics and electoral cycles than by the far-sighted practices required of international collective interests and practices. (Sterling-Folker 2000:115-16, italics original).

### 2.2.2 Constructivism: advancing the “domestic” into the international hydropolitical scene

Despite the fact that ‘realism and rationalism have been and remain dominant’ in the subfield of international security, ‘scholars have refined their analyses by paying more attention to domestic politics’ (Checkel 1998:329). Proposed here is that it is the constructivist perspective, which has given this greater attention to the “domestic”. Against the freezing of ‘the image of state territoriality into a generalized ontological feature of social life’ caused by state-centric epistemologies (Brenner 1999:50), constructivism advances a ‘process-based ontology’ (Sterling-Folker 2000:110) and, therefore, makes ‘its focus on historical process’ (Copeland 2000:210, for further details (see Swyngedouw 2004) which show historical *interactions* between different scales – local, national, international and their frequent reshaping of each other, rather than the presumed territorial isolation. Scale is ‘not ontologically given, but socially produced’; a conceptualisation that stems, according to Bassett (2004:33-4) ‘from a basic understanding among geographers: that all social life is sociospatially constituted’. This view of scale, Bassett (2004:34) continues, ‘differs from conventional notions of scale as a pre-given container through which social processes flow, or simply as a different level of analysis, as suggested in the widespread use of the scalar expressions like local, regional, and global “levels.”’ A prominent geographer, Swyngedouw (2004:26), asserts that ‘Starting analysis from a given geographical scale, such as the local, regional, national or global, seems to me, therefore, to be deeply antagonistic to apprehending the world in a dynamic, process-based manner.’ This perspective, critical of the conventional wisdom approach to IR, additionally provides for a process tracing methodology. In the view of Checkel (1998:332) ‘with their attention to practice and interaction’, constructivist ‘should be keying upon process and mechanisms’. A process-based ontology ‘directs the scholar’s “attention to the institutions and patterns of interaction created by human beings that help to shape perceptions and expectation, and therefore alter the patterns of behavior that take place within a given structure”’ (Sterling-Folker 2000:110).

Thus, constructivism is critical about the presumed unchangeable nature of state’s collective interest and practices. Unlike the realist scholars, the constructivists hold that relations among states cannot be predicted, primarily because of the domestic dynamics that reshape them. Uncertainty, for constructivists ‘is given by the human condition’ where human beings, according to them ‘are mutable – they can be changed through interaction’ (Copeland 2000:211). The term interaction, implying changing patterns of behaviour and new networks resulting from it, is central to the constructivist perspective. Thus, ‘Systematic constructivism (or what might be called “neoconstructivism”) focuses on interstate *interactions* as the source for new, or *reproduced*, conceptions

of self and other, which in turn *affect state propensities* to fall into conflictual or cooperative behavior.’ (Copeland 2000:211, italics added).

Constructivism does not only open a window for considering how multi-scalar (local, national, international) dynamics reshape politics of states and their interstate interactions, but also contest the prevailing perceptions about how “agents” and “structures” at any of these scales operate. The following lengthy extract from Jeffrey T. Checkel (1998:327-8) is illustrative of the difference between constructivism and the conventional worldview dominating the international relations scholarship.

To illuminate these differences between constructivists and other schools, it is helpful to explore their understanding of central terms. Consider “norms,” a concept that has gained much currency in IR scholarship over the past decade. While realists see norms as lacking causal force, neoliberal regime theory argues that they play an influential [role] in certain issue-areas. However, even for neoliberals, norms are still a superstructure built on a material base: they serve a regulative function, helping actors with given interests maximize utility. Agents (states) create structures (norms and institutions). For constructivists, by contrast, norms are collective understandings that make behavioral claims on actors. Their effects reach deeper: they constitute actor identities and interests and do not simply regulate behavior. As explanatory variables, their status moves from intervening to independent.... Norms are no longer a superstructure on a material base; rather, they help to create and define that base. For constructivists, agents (states) and structures (global norms) are interacting; they are mutually constituted (Checkel 1998:327-8).

The “opening” provided by constructivism and evolution of constructivism itself has apparently to do with a new socio-historical context in which we came to appreciate our interaction with nature, how in pursuit of our anthropogenic goals we came to harm it and how this generated new regimes of insecurity that (necessitate and) stimulate reflexivity on these processes. Interestingly, one such stimulant is associated with *water*. For Erik Swyngedouw (1999:445), along with Latour, ‘The “modern” environment and waterscape in Spain’ represent ‘a “hybrid,” a thing-like appearance...that is part natural and part social and that embodies a multiplicity of historical-geographical relations and processes’. This new “product” of “socio-nature” becomes illuminating. In the view of Swyngedouw (1999:446), ‘water embodies multiple tales of socionature as hybrid...The excavation of the production of these hybrid networks and their proliferation with the intensification of the modernization process entails a *constructivist view* in both a material and discursive way’ (italics added).

The non-traditionalist scholars of the post-Cold war era, presenting the contrasting ideas to those of the traditionalists noted earlier, see some new challenges that need to be considered. The non-traditionalists, both “wideners” and “deepeners” (Tarry 1999), challenged the traditionalists’ military-centric view of security associated to “state as unit of analysis”, as the source of a “state-centric

epistemology". The "wideners" 'argue that a predominantly military definition does not acknowledge that the greatest threats to state survival may not be military, but environmental, social and economic', while the "deepeners" 'ask the question of *whose* security is being threatened and support the construction of a definition that allows for *individual* or *structural* referent objects, as opposed to the *state*' (Tarry 1999, italics original). The necessity to *construct* a definition, therefore, is posed by real world challenges. 'Environmental change and resource scarcities' in the view of the non-traditionalists 'can lead to economic decline, social turmoil, disputes, or forced migration, which may in turn lead to instability, violence, and even armed conflict' (Dinar 2002:232).

Similarly, challenges posed by the late evolution of 'geographies of capitalism', as Brenner (1999:50) may argue, have questioned the state-centric epistemology – they have made room for seeing territorialisation as a product of historically determinate strategies; essentially in association to 'fetishization of space' in the service of resource management and conservation. One illustrative example to notify here is about how our "territorialising mind" may cause harm to nature even when it seeks to conserve it. Leaning on insights from non-equilibrium ecological science, Karl S. Zimmer (2000:361) sees that the 'standard assumption of stasis in [the current scaling of conservation's "second nature"]', with its static and piecemeal zones of land or resource use, is at odds with the rescaling of fluxes that is identified as a key feature of landscapes'. He continues to say 'Such fluxes might include biota-altering outbreaks of fire, hurricanes and other extreme weather, landslides and abrupt geomorphic disturbances. Human activities of land and resource utilization are likely to present fluxes that cannot be easily accommodated by static scaling'. Crucial to this context, according to Brenner (1999:50), 'is that territorialization must be viewed as an historically specific, contradictory, and conflictual process rather than as a pre-given, fixed, or natural condition'.

Interaction between agents and structures probably received greater attention from the domestic constructivists and unit-level liberals who 'emphasize changes within particular states that alter aggregated state interests and identities' (Cope-land 2000:211). In the current real world of globalization, especially with the latter conceived as "glocalisation", the state is undergoing an increasing "de-nationalisation" influenced by different interests and identities. 'The rescaling of the regulation of wage and working conditions or the de-nationalisation/privatisation of important companies and public services throughout Europe, for example, simultaneously opens up international competition *and* necessitates a greater sensitivity to subnational conditions' (Swyngedouw 2004:38, italics added). Globalization researchers, according to Brenner (1999:40) 'have begun to deploy a barrage of distinctively geographical prefixes – e.g. "sub-," "supra-," "trans-," "meso-," and "inter-," – to describe various emergent social processes that appear to operate below, above, beyond, or between entrenched geopolitical boundaries'. The distinctions between "domestic" politics and "foreign" rela-

tions are increasingly getting blurred, where their two-level game, as Dinar (2002:247) may argue, becomes a learning process, informed by interaction between domestic parties and their respective states and, simultaneously, by interaction between states. Domestic parties operate at different multi-scalar levels, including localities.

*Scale creation: beneficiaries and losers*

Spatial scale is perpetually produced (Swyngedouw 2004:34, Bassett 2004:33, Copeland 2000:211) with the involved actors having vested interests to pursue. Closely associated with “scale creation” and for the purpose of this research, the concepts of “relational scale” and “politics of scale” are discussed here. ‘Relational scale does not devalue, deny or exclude “naturalised” scales of social organisation such as “local”, “national” or “global”. Rather, it engages in the way in which scale is defined and used to both manipulate power and facilitate social transformation’ (Calgaro 2005:20). On the other hand, ‘The term *politics of scale* and its variant *scalar politics* refer to the strategies of social groups to extend or intensify their control over people and resources by creating sociospatial configurations and discourses in which scale is actively produced’ (Bassett 2004:33).

The socio-spatial configuration and discourses in which groups engage may result in structural inequalities and renders some groups vulnerable to different hazards through effective rescaling policies, for instance, of centralising resource management, therefore, paving the ground for “resource capture”/“ecological marginalisation” (section 2.3.2). Interestingly, while it could be a predictable outcome of a scalar politics, vulnerability operates as a moment of “de-nationalising” through calling for looking into much smaller localities. In this respect, we may claim that the emerging sustainability-guided interdisciplinary vulnerability analysis framework proposed by Billie L. Turner *et al.* (2003) gives greater sensitivity to *sub-national* condition emphasized above, precisely, by viewing vulnerability as “place-specific” or “place-based”. Vulnerability is central to scale creation in its association to more concrete localities – its being ‘always “place specific” and localised, involving constant interactions between multiple stakeholders (be they individuals, community groups or social organisations) with localised concerns and competing agendas’ (Calgaro 2005:15). Billie L. Turner *et al.* (2003:8076) note that ‘The growing role of multiple stakeholders in defining vulnerability problems, typical with local or localized concerns, lends increasing attention to this level of analysis while simultaneously linking to other places and scales of analysis’

Apparently, it is the various emergent social processes, crossing the “old” geopolitical boundaries, which are currently reshaping the locales. ‘The vulnerability of an individual, group or community is determined by multi-faceted socio-political processes that operate through social institutions dispersed across multiple spatial scales of social organisation (local, regional, national, and

global)' (Calgaro 2005:15). According to Calgaro (2005:15) the three interconnected dimensions of "exposure", "sensitivity", and "resilience" that collectively determine the vulnerability of a household or community are all place-specific. From Calgaro's (2005:20) analysis, three structural components involved in scale creation and scale manipulation could be identified. These are, firstly, social actors, including the state and non-state political actors (political activists, industry stakeholders and community representatives); secondly, 'social structures including political institutions and social networks'; and, finally, 'social processes such as the capitalist market'.

In relation to this understanding, namely through viewing scale as 'an expression of power and control over economic, social and political capital' Calgaro (2005:20) asserts that relational scale theory allows, through three interrelated avenue, for exploring the subjective politicised discourses that underlie the vulnerability of a community. The first avenue is one of *deconstructing the various scales of power*. Pursuing this avenue is viewed to help reveal the positioning of the various social actors involved, which accordingly help build a picture of these actors' competing vested interests and their capabilities of accessing resources in order to achieve such interests. The second venue is one of *identifying the dominant elites and their agendas*, which therefore 'creates a forum for analysing the way in which those with power...continuously redefine and reinforce politicised processes and complementary structures to sustain their power base. This process simultaneously strengthens their own positions while marginalising others.' Finally, following from previous, is the avenue of *illuminating the multi-scalar systems of governance* through which various stakeholders seek to advance their own agendas.

How groups conceive of or imagine their "place" – local, regional, or otherwise, national – has probably depended historically on their relationship with outsider groups, the "other". In association to accessing the resources, especially if the latter are scarce or expected to become scarcer, the resource niches become contested ones and relations among groups become tense. Powerful groups would seek to prohibit weaker ones from accessing resources. Regarding control of resources, under some circumstances, one group may capture the state itself, and therefore confine the political and economic advantages to its own membership to the detriment of other groups (Deng 2000:133). 'On the one hand, domineering organizations attempt to control the dominated by confining the latter and their activities to a manageable scale. On the other hand, subordinated groups attempt to liberate themselves from these imposed scale constraints by harnessing powers and instrumentalities at other scales' (Jonas, cited in Basset 2004:34). If will be achieved, control over spatial scale would translate to economic and political power. In the view of Swyngedouw (2004:34) 'the power to appropriate place is always contested and struggled over, then the alliances social groups or classes forge over a certain spatial scale will shape the conditions of ap-

propriation and control over place and have a decisive influence over relative socio-spatial power positions’.

Rescaling attaches new values to “territories” and, accordingly, to their inhabitants. In his article “Containing the *Donzow*: The Politics of Scale in Côte d’Ivoire”, Bassett (2004:35) notes that the status and origin of individuals whether autochthonous, non-native, or foreign, are seen as integral to socio-spatial processes, and scale-making is used by political leaders to recreate ethno-territories as a form of control and means to gain and retain political office. Such process may contribute to constructing “imagined spaces” and “imagined communities”. Territories can then be reclassified as rich or poor, therefore, worthy of development or not; communities inhabiting these territories can be stigmatised as hardworking greater producers or lazy who waste the resources. Dominant groups, accordingly, may develop a “frontier-cast” ideology in relation to the resources of other groups; therefore, justifies the large-scale looting of these resources. The “frontier-cast” ideology’, according to Hultin (1995:36), ‘is an ideology based on the ethnocentric self-perception of a “core group” which considers itself surrounded by large tracts of land that are politically and physically “open” to exploitation and inhabited by people who are “inferior” in that they belong to an “other” (i.e. different and thus lower) social order’.

The frontier-cast ideology, in our view, might be the outcome of socio-spatial construction; it could be influenced by changes in balance of power and technology, which may lead to changing perception about or attaching new value to resources (see Dietz 1996:42).

### 2.3 Discourses on water scarcity

The two theses, which make the focus of debate over water, mentioned earlier, i.e. the “water war” thesis and the critical counter-thesis, actually, reside in a continuum of thought and embody debates on conflicts over natural resources, which are essential to consider in some detail. Peter Uvin (1998:182-4), for instance, classifies perspectives on communal conflicts over natural resources into three categories, namely the “hard Malthusian” and “soft Malthusian” perspectives and a third perspective which views ecological resource scarcity as being *socially constructed*. In his view ‘the three schools represent different positions on a continuum of thought regarding the relationship between ecological resource scarcity and social conflict; the line of the continuum consists of the importance attached to *intervening variables*’ (Uvin 1998:184). Another scholar, Anthony R. Turton (2000), suggests five discourses, particularly in association with conflicts over water. He presents these in their chronological development: i.e. “Malthusian”, “virtual water”, “structural inequality”, “environmental scarcity”, and “social scarcity” discourses. Obviously, these five also represent different positions on a continuum of thought. The first coincides with Uvin’s first category, and the last three, probably, are sub-discourses of Uvin’s last category, i.e., the

social construction of ecological resource scarcity. However, these scholars each point to a relatively different school, i.e. the “soft Malthusian” for Uvin and “virtual water” discourse for Turton.

Thus, the classifications provided by these two scholars add up to six rather distinguished discourses, though their borders are often open towards each other. Referring to the five discourses he identified, Turton (2000:114) notes, ‘some discourses contain elements of others, and a clear-cut distinction is sometimes difficult to make’. The area of conflict over resources probably invites several other scientific explanations and/or interpretations that are not necessarily in these six approaches (see Turton 2000:114). Competing over interpreting a hydropolitical field, these discourses have reflected both the shifts in the dynamics on the ground and transformations in the accumulated body of knowledge about these dynamics. Below, we shall briefly examine each of these discourses by showing their cumulative contribution to clarifying and understanding domestic and international hydropolitical issues. The six discourses are addressed under two main perspectives. The first two discourses are discussed under the Malthusian perspective and the rest under the constructivist perspective.

### 2.3.1 The Malthusian perspective on water scarcity

For quite some time, the debates on hydropolitics seemed to have been dominated by a Malthusian perspective. With its predominant emphasis on aggregate national and global statistics this perspective, in our view, is compatible with the state-centric epistemology we noted earlier. This perspective can be divided into the two discourses noted above, i.e. the “hard” and “soft” Malthusian perspectives.

#### *The “hard” Malthusian discourse*

The hard Malthusian perspective essentialises demographic factors as determinant of conflicts and it is this discourse that gives credence to the “water wars” thesis. Its ‘argument holds that social conflicts and communal violence are the unavoidable results of *overpopulation* and ecological resource scarcity’ (Uvin 1998:180, italics added). In the words of Turton (2000:114), the ‘Malthusian-type discourse posits a *linear relationship between population growth and water scarcity*’ (italics added). It is against this background that a number of researchers is engaged in calculating how much water is available on Earth (precipitation, surface water and that in underground aquifers), how much of it humans have now appropriated, and when humankind will face “water stress”, “water scarcity”, or even exceed the “water barrier” (see Uitto 1998:52, Gleick 1993:108). Malin Falkenmark (1989:116) developed what has now become a classic water stress index. According to this, per capita water availability is measured, i.e. the total amount of water available divided by total population in a country or a region. Accordingly, three indices are suggested where the units of measurement are cubic metres per year. Thus, a per capita water availability of

between 1,000 and 1,600 m<sup>3</sup>/yr indicates “water stress”, between 500 and 1,000 m<sup>3</sup>/yr indicates “chronic water scarcity”, while a per capita water availability below 500 m<sup>3</sup>/yr indicates a country or region that is beyond the “water barrier” (Falkenmark 1989:116, see also Ohlsson 1995:13, Shuval 2000:41, Hoekstra 1998, McCaffrey 1997:47, De Waart 101, Donkers 1997:136). The essence of this argument is that there is a fixed amount of fresh water and increasing population numbers. The supply of fresh water that is available on Earth is limited to a maximum of 45,000 km<sup>3</sup>, which, associated with the current level of technology, is sufficient for 4.5 to 9 billion people, disregarding increasing pollution (Saeijs and Van Berkel 1997:19, De Waart 1997:101). In 1850, the worldwide per capita water availability was 43,000 m<sup>3</sup>; today it is under 9,000 m<sup>3</sup>, a decrease caused by population increases (McCaffrey 1997:45, 1997b:158, De Waart 1997:101).

Seeing the total amount of water falling shorter due to a steady increase of population is rather worrying if viewed from within a paradigm of a fixed amount of water that has historically been the same and will remain so in the future (Hultin 1995:183, see Shuval 2000:41). Thus, central to the thesis of the Malthusian-type discourse, as Turton (2000:114) argues, ‘is the argument that as populations grow, so water scarcity increases, leading ultimately to a water war’. In an article titled *Water Wars*, Joyce Starr (1991:19) asserts, ‘Water security will soon rank with military security in the war rooms of defense ministries’ (See also Ohlsson 2000:1, Turton 2000:114). The World Bank, according to McCaffrey (1997a:43), ‘tells that “[t]he wars of the next century will be over water”’.

### *The ‘soft’ Malthusian discourse*

Closely related to the “hard Malthusian” perspective is the “soft Malthusian” one. However, the latter spells out a clear role for other intervening factors. According to Uvin (1998:181) the “soft Malthusian” perspective ‘is less adamant about the unavoidability of communal violence, arguing that although conditions of severe ecological resource scarcity constitute a source of social tensions, other factors intervene and cause outcome to vary’. Thus, for Prunier (cited in Uvin 1998:182-3), Rwanda’s ‘genocidal violence of the spring of 1994 can be *partly* attributed to the population density’ (italics added). Rather than the apparent decisive assurance about the abrupt coming of a water crisis characteristic of the “hard” Malthusian type of discourse, the “soft” Malthusian perspective argues the likelihood and degree of progression leading to crisis. ‘As human populations grow, as improving standards of living and industrial expansion increase the water requirements, and as escalating need for food in dry climate areas increases the need for irrigation, water and water supply systems are increasingly likely to become both objectives of military action and instrument[s] of war’ (Falkenmark and Lundqvist, cited in Wouters 1999:79).

Critics have dubbed the Malthusian discourse as being engaged in ‘a numbers game - a story of shrinking per capita-allotments’ (Ohlsson and Lundqvist, in

Turton 2000:114, see also Ohlsson 2000). Its predictions are, therefore, considered ‘sensationalist claims about water wars’ (Schwartz *et al.* 2000:83). Aaron Wolf and Jesse Hamner (2000:55-6) note that “‘water war’ literature is not based on an historic reality’. To them, what the literature refers to as water warfare is in fact mere political tension or occasions on which water is used as a tool, a target, or happened to be a victim of armed conflict. They conclude that ‘there has never been a single war fought over water’ (Wolf and Hamner 2000:57-8, see also Ashton 2000:89). Waterbury (2002:9) considers the attacks by Israel on Syria’s worksites, which meant to divert, unilaterally, the headwaters of the Jordan River, as the ‘only one significant instance in the twentieth century in which fighting broke out over international water issues’. By prioritising population increments, Malthusian-type discourse might lose sight of phenomena such as frequent population movements between areas and, therefore, of how these movements affect demands for water in these areas. In the words of Demin (2000:678), ‘ignoring the enormous daily and seasonal migration...in addition to other reasons, results in underestimation of population taken into account in calculating per capita water supply’.

Yet to our understanding, despite these critiques and despite its inherent empiricist nature, the Malthusian discourse has partly contributed to build a necessary database which provides essential background (in the form of empirical data) for what we see today as the embryonic, yet thoughtful “theory” on water scarcity. More detailed and realistic projections of water scarcity are accompanied, as Ohlsson (1998:9) would argue, by a shift in focus from natural resources scarcity to consideration of social resource scarcity – a shift, to our understanding, from *empiricist* assertions to an *empirically* aided interpretation. Importantly, this shift heralds the possibility and ability to overcome water scarcity and takes us from the threat of “water wars” to the promise of enhancing societal “ingenuity” and generating “social resource abundance”. This is at the heart of the constructivist perspective.

### 2.3.2 The “Constructivist perspective” on water scarcity

A relationship between a smaller and a larger system may be seen both as part of a larger whole or separate/adjacent to it. Water can thus be viewed as an ecological system, encompassing various components and could also be part of a larger ecosystem, where the latter is yet part of larger one. Asserting that ‘issues of *scale* and *range* are central to our *understanding of hydro politics*, of which water resource management is but a component’, Turton (2003b:10, italics added) uses recent research findings to suggest further “domains” that need to be considered in hydropolitical discussions. According to him, the research currently under way at the African Water Issues Research Unit (AWIRU), based on the works of Malin Falkenmark and Tony Allan together with other new concepts, suggests that the hydrological cycle, as we currently know it, can be divided into four dis-

tinct domains. These are the “natural”, “engineering”, “institutional” and “trade” domains. Turton (2003b:10) notes that each of the above domains ‘has a specific place in the hydrological cycle when seen from the perspective of scale, yet none of these appear in the current literature’. As we shall see, these domains exist within historical contexts – our perceptions about them are therefore the outcome of societal evolution.

Thus, the “engineering domain”, according to Turton (2003b:10), ‘consists primarily of water that has been made available through human technical ingenuity (consisting largely of “blue water”)’. That last refers to ‘liquid water flows in rivers and aquifers’ (Falkenmark 1999:23). Turton (2003b:10) sees this domain as ‘technical ingenuity dominant’ and the focus, here, mostly, but not exclusively, is on the mobilisation of the “blue water” fraction of the hydrological cycle. As such, the “engineering domain” functions, among the other domains, at the lowest level of the scale. As we shall see later, engineers are principally concerned with water supply augmentation. The “engineering domain” is precisely the abode of those concerned with this task. ‘It consists of aspects such as Inter-Basin Transfer (IBT), desalination, retreatment of effluent and aquifer development’ (Turton 2003b:10). However, it is important to emphasise here that it has a geographical dimension, where the important aspect, Turton (2003b:10-11) urges us to note, ‘is that the level of *scale* is limited to the *river basin*, where at best it can straddle a given watershed. The main vehicle of delivery in terms of water resource management is the IBT in the context of Southern Africa, which seeks to manage *spatial* and temporal variability’ (italics added).

The functioning of the “hardware” in the “engineering domain” is often controlled and directed through “software” of measures found in different societies. The “institutional domain” is where ‘water demand management (WDM) and other allocative measures are taken in order to improve the efficiency of water use’. It is “social ingenuity dominant” and the focus here is on issues related to water allocation, particularly under conditions of basin closure, where all the water available has already been allocated to productive activities (Turton 2003b:11, 2003a:19). In Turton’s view, the “institutional domain”, as such, comes at the second level of the scale, ‘straddling watersheds and international borders where appropriate. Its main focus is the river basin however, where the primary vehicle of delivery in terms of water resource management is policy centred on allocative efficiency and conflict attenuation.’

The range expands further with the other two domains. In Turton’s (2003b:10) analysis, the “trade domain” comes at the third level of the scale, ‘straddling problemsheds, with the main vehicle of delivery being trade in water rich products’. The argument here is that when water resource problems cannot be successfully addressed in the “local watershed”, solutions can be found in “problemsheds” – in this case global trading (Allan 2003:3). The range here certainly involves economies far beyond the national economy, which is often regulated as part of the “institutional domain”.

The last domain, the “natural domain”, according to Turton (2003b:10), ‘consists of the flow of water vapour through the global weather systems. As such it functions at the highest level of scale straddling continents and ecosystems.’ The functioning of these domains will become clearer in our discussion of the remaining four discourses on water scarcity.

### *The “virtual water” discourse*

The “virtual water” discourse is a step further on the continuum of defining the relationship between resource scarcity and conflicts and, as we shall see later, will revolutionise the whole debate about hydrogeopolitics. “Virtual water” is defined as ‘the water embedded in water intensive commodities such as cereals which happily can be readily traded’ (Allan 1999a:3 see also Charrier and Curtin 2000:16, Shuval 2000:41, Nakayama 2003:17). It is ‘the amount of water that is needed to grow the food imported by water-scarce countries due to lack of water resources. A ton of imported food roughly corresponds to a thousand tons of virtual water’ (Gordon and Folke 1999:34, see Waterbury 2002:46). Emphasising inter-regional cereals trading, the “virtual water” discourse breaks open the geographic “confines” inherent in a Malthusian perspective, through assigning greater “flows” from the surrounding environment – ‘the question of food sufficiency should be analyzed at the global level’ (Feitelson and Chenoweth 2002:265). According to Tony Allan (1999a:2), who originally articulated the concept of “virtual water”, ‘there is substantial evidence that while water is a fundamental resource in any political economy it does not determine socio-economic outcomes for severely water stressed political economies’. Averting conflicts is considered possible by importing “virtual water” from grain-surplus regions to water-stressed or water-scarce regions. The most water-stressed region in the world, the Middle East, is cited as the illustrative example. Allan (1999a:3, 1996) notes, ‘More water “flows” into the Middle East each year as “virtual water” than flows down the Nile into Egypt for agriculture’ (see also Turton 2000:114). For arid regions, “virtual water” provides a good option, being ‘far cheaper and with less hazardous consequences to the environment’ (Charrier and Curtin 2000:15, Chapagain and Hoekstra 2003). We confine ourselves to this description here, though we shall return to the “virtual water” concept later.

The “virtual water” discourse may be criticised for its stark optimism. Echoing ideas of the Manchester School of laissez-faire liberalism (see Hall 1995:645) the “virtual water” discourse gives the lead to trade in an interdependent world economy. It therefore glosses over possible territorial and political regulations of states that may block the flow of goods. An important shortcoming of the “virtual water” discourse, to our understanding, stems from its overemphasis of *international* “virtual water” exchanges and, as a corollary, its almost total neglect of “virtual water” exchanges at the *national* and *local* levels. In connection to the “structural inequality” and “environmental scarcity” discourses

discussed below, we hope to expand this scope in order to amplify what the “virtual water” discourse has been silent about, yet what it potentially allows for.

### *The structural inequality discourse*

The “structural inequality” discourse provides more clarity on a hydropolitical arena. Structural inequality is considered to take place ‘when unequal access to, and control over, water resources within a given country occurs over time’ (Turton 2000:114). Water, in the words of Charrier and Curtin (2000:13), ‘is a critical resource the possession of which confers power and summons many distinct images and significances for different people’. This can be seen within the “institutional domain”, where regulations about accessibility and rights are defined and where WDM and other allocative measures are taken to improve the efficiency of water use or, for that matter, erroneously to degrade or deplete the resources.

The concept of “structural inequality” was originally articulated by Homer-Dixon (1998, 1996) in connection with the two concepts of “resource capture” and “ecological marginalisation”, essentially indicating the importance of scrutinising the *power* dimension in accessing resources. (These two concepts will be defined and elaborated later.) ‘Water has been identified as the trigger of wars in the next [millennium], an extremely serious statement, which despite critical voices, nevertheless highlights the intimate links between *water* and *power*’ (Rockstrom 1999:12, italics added, see also Mehta 2000:16). This is, in fact, an interesting observation, that even if the debate on water wars increasingly fails to give credible proof of this thesis (noted above), it is the intimate link between water and power which actually keeps the claims of the “water war” thesis glowing. Structural inequality is viewed as ‘a political discourse’, where ‘people are seen as being the victims of the political economy’ (Turton 2000:115). Besides the geographic, demographic and economic factors, water scarcity also depends on social structures and behaviours (Kiss 1997:60). Falkenmark and Lundqvist (1995:183) note that the perpetuation of poverty coupled with population increases in resource-scarce areas would mean large numbers of people with limited power to access water or control its development and allocation. They continue to argue, ‘Other groups will, through their *purchasing power* or *political position*, be able to demand an increasing share of the water that is actually accessible for distribution’ (italics added). Alan Richards (2002:5-6) argues that public irrigation or municipal water systems, which are the norm nearly everywhere, ‘almost always heavily subsidize some users, while simultaneously (and increasingly) failing to serve others’. He notes that ‘as with any policy, governments use water allocation rules to reward friends and punish opponents’ (Richards 2002:6, see also Von Benda-Beckmann *et al.* 1997:225).

In our view, especially in connection with socio-spatial intervention by governments or other powerful institutions, allocation of water may result in dramatic changes, which sometimes entrench existing power relations or totally

shift the balance of economic and political might to the benefit of new groups. In its simplest form, the power dimension manifests in the difference between water ‘redistributing itself through natural cycles, contributing to climate control and the hydrological cycle’ (Karyabwite 2000:3) and water being channelled, diverted, and made to flow to where and when it is needed (Falkenmark and Lundqvist 1999:132, see Charrier and Curtin 2000:13, McCully 1996). River waters can be used to develop their natural neighbourhoods, as well as to benefit groups far from the area of natural drainage. The choice of areas to be irrigated, of dam sites, destination of canals and amounts of water they carry, in fact, represent interests of real populations, as well as institutions and political regimes.

Large-scale public works, which provide subsidized services, are a highly visible way for governments to reward their *constituents* and *build alliances* with social groups whose support they seek. In the absence of water markets, subsidized irrigation water quickly becomes capitalized into the value of land (which does have a market), turning the owners of irrigated land into a potent lobby for the continuation of subsidies. Landowners then find allies in the government bureaucracies responsible for implementing these subsidies, forging a *political coalition* that strenuously opposes any increase in water charges (Richards 2002:13, italics added).

Such political coalitions could also influence decisions to allocate or not to allocate water for development of certain regions. Formation of such alliances at local, national, or even international levels thus is important to consider.

Given the intrinsic relationship between water and land, political coalitions explicated in the above passage could extend to land, where they can facilitate accessibility to primate land or maintain an existing regime of land tenure against possible land reforms. A conscious policy of strengthening allies can result in stark social inequalities, vesting power in the hands of some and depriving others. Along with Swearingen, Richards (2002:14) notes that perhaps 9,000 to 9,500 large landowners possess some 2.2 million hectares, i.e. nearly 30 percent of Morocco’s farmland. These large landowners, he continues, ‘constitute a critical constituency for the monarchy, as do the much larger number of smaller farmers, who know perfectly well that *their relative wealth is in large measure the result of public investment*’ (italics added).

Pursuing groups’ interests or the goal of consolidating the prevailing order might result in geographical inequalities – uneven development between regions – or bias to certain regions, as in the case of Mexico. According to Richards (2002:14),

[T]he expansion of irrigated agriculture in Mexico was driven by the (then) ruling party’s (Partido Revolucionario Institucional, or PRI) goals and needs. Irrigation investment was concentrated in the arid North, and not only for hydrological reasons. The North historically had been a hotbed of opposition to the central government, and part of the “pacification” strategy of Elias Calles (effectively in power from

1924 to 1934) was to *concentrate irrigation investment* in the northern states of Baja California, Sonora, Sinaloa, and Tamaulipas, which together *received more than half of all such investment* (italics added).

Water allocations can be used to create a new “core group” of shared interests. Elias Calles of Mexico, according to Ascher (cited in Richards 2002:14), ‘distributed much of the irrigated land to co-opt enemies and consolidate fragile political alliances, creating a new class of well-to-do farmers out of political bosses’.

Thus, water procurement and allocation may reflect an alliance of the powerful segments in society. One aspect relevant to this process is ‘the economic use of water’ and ‘the adverse effects of deliberate policies designed to favour agricultural export’ (Turton 2000:115). Associated is the regime of scientific “truth” – how science perceives benefits from and allotment of natural resources – and how the modernist elite uses science for such purposes (see Waterbury 2002:12). Two “discourse groups”, i.e. hydraulic engineers and economists, have largely influenced “scientific” policies that have undermined indigenous knowledge and changed the fortunes of regions. Especially in essentialising a supply-oriented approach (Garduño 1999:69), these discourse groups have defined and aided what Mohamed Salih (2001, 1999) calls “authoritarian development” – an essential concept for understanding the dynamics and processes of “resource capture” and “ecological marginalisation”. The two discourse groups are, thus, central to scalar politics; they have engineered landscapes and attached discriminative values to them; they are behind the “truth” advanced in allocating resources.

Justifications for “capturing” the resources of traditional farmers and pastoralists for the sake of initiating irrigated agriculture, for instance, reside in promises embedded in the “development discourse” and are addressed and implemented by the “developmentalist state”, largely within an “authoritarian development” paradigm. ‘Authoritarian development denies peoples the right to livelihood resources in the name of progress’ (Mohamed Salih 2001:43). Progress viewed in the form of large-scale agriculture and the necessary waterworks associated with it causes a lot of communal suffering, while it is grounded on nationalist commitment and sentiments. According to Richards (2002:4) ‘investments have been – and often still are – seen as essential to forestall the ravages of drought on the agricultural sector. As such, investment in water-supply-enhancing infrastructure is seen as a *critical component of national security*: dams are believed to bolster *national independence and sovereignty*’.

Construction of waterworks is inherent to strategies of building alliances and for legitimising political regimes (see McCully 1996, Waterbury 2002:12), especially through the espousal of authoritarian development.

Authoritarian development, characteristically ‘top-down, centralised, disempowering and impoverishing’ (Mohamed Salih 2001:17), is actually a process of socio-spatial construction – a process of constructing new winners and losers. As a paradigm, it essentially embodies the strictest technologies of con-

trol, especially in the political and economic arenas, where it acquires one of its main features, i.e. 'excessive centralisation, with development treated as the monopoly of the state' (Mohamed Salih 2001:54). With the state monopolising both legitimate violence and the truth about development, the modification of water sources would always benefit the few who are expressing the will of the state (the bureaucracy) and those benefiting from or backed by the state irrigation facilities (for details see Rahmato 1999:4, Richards 2002:4). We may get more clarity by detailing on this in the next scarcity discourse.

### *The environmental scarcity discourses*

A more elaborate discourse is that of "environmental scarcity", which grew from the cruder structural inequality discourse (Turton 2000:115) gives more clarity to the power dimension discussed above. The main contributor to this discourse is Thomas Homer-Dixon and his research team, known as the Toronto Group. According to Homer-Dixon (1998:205) environmental scarcity takes three forms. First is *supply-side scarcity* caused by depletion and degradation of natural resources, which makes the resource "cake" smaller (see also Ohlsson 1998:6). Second, *demand-side scarcity*, is attributed to the population increment and new consumption styles, which boost the demand for a certain resource (see also Turton 2000:116); it makes 'the slices of the *diminished* cake smaller' (Ohlsson 1998:6, italics added). The last form of scarcity, *structural scarcity*, is 'caused by severe imbalance in the distribution of wealth and power that results in some groups in a society getting disproportionately large slices of the resource pie, while others get slices that are too small to sustain their livelihood' (Homer-Dixon 1998:205). We shall clarify the inter-linkages between these three forms of scarcity, however, by pointing out some critiques from "environment-conflict" research – the theme of the environmental scarcity discourse.

In connection with the wider body of environment-conflict research, Nils P. Gleditsch (1998:387) voiced a strong critique of Homer-Dixon's "environmental scarcity" terminology, saying that it 'muddies the waters'. 'Many of the references to "environmental" factors that are posited as capable of stimulating an arms race or triggering a war', in his view, 'are unclear as to whether the causal factor is absolute resource scarcity or environmental degradation' (see also Schwartz *et al.* 2000:79). In response to this critique, the Toronto Group provides four points (Schwartz *et al.* 2000:79-80) that would focus on causal mechanisms. Firstly, they argue that "simple resource scarcity" and "environmental degradation" – the two categories, which Gleditsch adopted from Libiszewski – 'are not causally separate: degradation of an environmental resource, like cropland or freshwater supplies, can cause a straightforward – or "simple" scarcity of that resource'. Secondly, they see that 'degradation of an environmental resource is only one of two possible sources of a decrease in a resource supply. "Degradation" refers to a drop in the quality of the resources; but cropland, freshwater, and

the like can also be “depleted,” which means the resource’s quantity is reduced.’ The Toronto Group views restricting the analysis to conflicts caused by degradation of environmental resources as resulting in omitting a main source of the reduced supply of such resources in many poor countries. The third and fourth points clarify this main source of reduction of resources. Furthermore, the Toronto Group states,

[E]nvironmental degradation, the phenomenon Gelditsch wants us to emphasize, is exclusively a supply-side problem: if we degrade a resource, then there is less of it available. Any hypothesis linking environmental degradation to violence is linking, essentially, the reduction in the resource’s supply to violence. However, if we want to explore the causes of violence, a resource’s *absolute* supply is not interesting. What we should investigate, rather, is the resource’s supply *relative to*, first demand on the resource, and, second, the social distribution of the resource (Schwartz *et al.* 2000:79, italics original).

The Toronto Group maintains that ‘[t]he relationships between supply and demand and between supply and distribution determine people’s actual experience of scarcity, and under any practical hypothesis, it is these relationships that influence the probability of violence. This is the reason that we include demand and distributional aspects in our definition of environmental scarcity’ (Schwartz *et al.* 2000:79). According to the Toronto Group, the singling out of environmental degradation causes reductionism, which leads to their fourth and final point: ‘focusing on environmental degradation alone tends to lead researchers to overlook or neglect key interactions – such as the processes we call *resource capture* and *ecological marginalization* – among supply, demand, and distributional pressures’ (Schwartz *et al.* 2000:79-80, italics original).

Supply-side, demand-side, and structural scarcity, thus, are structurally linked in reality and, therefore, theoretically conceived of in the same manner. According to Ohlsson (1998:6), the heuristic value of Homer-Dixon’s concept of structural scarcity lies in indicating that ‘the doubly diminished slices end up in the hands of more powerful segments of the population, while the less powerful find their slices diminished even further’. The concept of ecological marginalisation gives more clarity to the interactions between the three forms of scarcity. ‘*Ecological marginalization* occurs when unequal resource access (skewed distribution) combines with population growth (an increase in demand) to cause long-term migrations’ (Schwartz *et al.* 2000:80, italics original). It means forcing people who have had their resource base captured to move increasingly to precarious locations (Turton 2000:116, Schwartz *et al.* 2000:80). Ecological marginalisation does not cause equal impact on all who are subject to it. The burden among the marginalised is differential where dispossession and displacement affect the rural poor more than the well-to-do rural population (Mohamed Salih 1999:4, see also Homer-Dixon 1998, Dalby 1998:198, Richards 2002:4).

On the other hand, '[r]esource capture occurs when degradation and depletion of a renewable resource (a decrease in supply) interacts with population growth (an increase in demand) to encourage powerful groups within a society to shift resource access (that is to change the resource distribution) in their favor' (Schwartz *et al.* 2000:80, italics original). This certainly involves a direct conflict of interests and, therefore, perceptions about values attached to water: 'powerful individuals and/or favorably situated groups will appropriate the water for their own use, with little or no regard for the consequences of their actions on other parties' (Richrads 2002:17).

Although it appears logical that ecological marginalisation follows from resource capture – the latter being caused by the legal or power regime that determines accessibility to a resource – the two processes, actually, affect each other. 'Resource capture and ecological marginalization are often intimately inter-linked, with one leading to the other' (Schwartz *et al.* 2000:80). Resource capture 'may be seen in many diverse contexts' (Richrads 2002:17). It therefore could be influenced by a variety of events such as introduction of new technology, the occurrence of hazards, inflow of capital, land reform, political revolution, geopolitical changes, and the like. The introduction of Green Revolution technology, according to Richrads (2002:17), 'raised the value of land and water in Pakistan', where 'richer farmers (so-called influentials) managed to bend the old, relatively equitable *warabandi* system for water allocation in their favor, forcing poorer farmers to bear the brunt of rising water scarcity'.

Natural hazards bring about different responses. They often provide "moral" justifications for resource capture, for instance, in association with large-scale agriculture for food security. Droughts give rise to speculation and add value to cultivable lands; and food deficits prompt expansion of large-scale agriculture (Mohamed Salih 1999:59, 1992:14-5). Incidences of drought awaken authorities and urge them to initiate irrigation (see Dhar and Nandargi 2001:107). A history of food insecurity due to concurrent droughts caused Morocco to engage in persistent irrigation constructions, calling for the completion of 12 new dams, including the second largest in Africa (Al Wahda Dam) and the planning of 51 other additional dams for the coming 30 years (Richards 2002:4).

Shifts in demand for water because of new agricultural policies, movements of refugees, or immigration can indicate problems among riparians (Wolf and Hamner 2000:64). However, environmental scarcity, as case evidence shows, does not automatically lead to conflict (Ohlsson 1998:7). In fact, it 'is always found in conjunction with other factors that are usually the major causes of conflict. As such, environmental scarcity can aggravate existing conflict and make it more acute' (Turton 2000:117). At the domestic level, widespread civil violence driven by scarcity emerges if groups exist with strong collective identities and where there are clearly advantageous opportunities for these groups to engage in violent collective action (Ohlsson 1998:7). The sources of environmental scarcity, according to Ohlsson (1998:7), 'can produce "social effects" that are linked

to violent conflict in countries that are unable to adapt to the environmental scarcities'. He distinguishes four such social effects. These are, firstly, decreased agricultural production; secondly, decreased economic productivity; thirdly, population displacement; and finally, disrupted institutions and social relations (see Rockstrom 1999). However, he suggests that these social effects of environmental scarcity could always be used to generate social resource abundance instead of generating/reproducing social resource scarcity.

### *Social scarcity discourse*

Complementary to the above is the "social scarcity discourse". This discourse is yet another critical of the "water wars" thesis. The "social scarcity" discourse heralds Leif Ohlsson (1998, 2000) as its main contributor; though with the contribution of Homer-Dixon featured as a continuation of the "environmental scarcity" discourse (see Turton 2000) and also significant contributions of Turton (2000, 2003a, 2003b) as well as many other scholars. Ohlsson's major point of departure is the view that it is not the natural resource(s) *per se* that really matters as cause of conflict; rather it is the functioning of the complex whole of a socio-political and environmental system in succeeding or, otherwise, failing to achieve what he refers to as "adaptive capacity". Adaptive capacity is seen in connection to a 'social resource' and is referred to as a 'most general and multi-faceted concept' comprising 'socio-economic development, education, human rights (including and stressing women rights), general institutional capacity, etc.' (Ohlsson 1998:14). Significant to Ohlsson's contribution is his suggestion that it is possible to generate social resource scarcity/abundance: 'just as there can be either a scarcity or abundance of *natural resources*, there can be either a scarcity or abundance of *social resources*' (Turton 2000:118, italics added). Thus, water scarcity does not necessarily lead to conflict. 'The challenge of rising water scarcity' according to Richards (2002:3), 'offers both dangers and opportunities. A moment's reflection will show that there is no necessary connection between water scarcity and conflict. It should also show that rising scarcity has the potential to contribute to conflicts. Everything depends on how well (or poorly) the people affected can cooperate.' More on opportunities, namely cooperation, will be discussed later when we consider spatial dimensions.

An essential clarification to be made in relation to Ohlsson's contribution, is 'the need to distinguish between a *natural resource* (what he calls a first-order resource) and a *social resource* (what he refers to as a second-order resource). Thus it is possible for a social entity that is being confronted by an increasing level of first-order resource scarcity (water) to adapt to these conditions, provided that a high level of second-order resources (social adaptive capacity) are available' (Turton 2000:118, 2003a). Scarcity of physical water does not necessarily mean that a country has water scarcity or, more strictly, suffers from consequences of water scarcity. Allan (1999a:3) grasps this notion in stating, 'Water availability

does not determine economic outcomes.’ He points out, ‘Communities, and especially national communities, have the potential to combine extremely scarce water and other factors of production in ways that generate sustainable livelihoods’ (Allan 1999a:3, 1999b:5). The reverse is true with countries that have abundant water resources, which by adopting wrong policies may undergo a “structurally induced relative water scarcity”. The latter, according to Turton and Warner (2002:55), is ‘[a] combination of a relatively high level of first-order resource availability with a relatively low level of second-order resource availability. Water scarcity in these situations is analyzed as a result of the inability to mobilize sufficient social resources to effectively manage the problem.’ Distinction between first- and second-order resources, according to Turton (2000:118), facilitates the development of a set of key concepts, using a matrix consisting of different combinations of first- and second-order resources. The result of this, according to him, was the articulation of the concept of “water poverty”, as distinct from “water scarcity”, which is a combination, or ‘existence of both a first and second-order resource scarcity simultaneously’ (Turton 2000:118, Turton and Warner 2002:55, Feitelson and Chenoweth 2002:267).

Thus, water scarcity is not a permanent condition associated with population increase. Rather, it is a condition that a nation might not reach, could halt if it does happen, or even be reversed, depending on the nation’s ability to generate abundance of its second-order resource. In the same manner that an existing order can induce structural scarcity or environmental scarcity as detailed above, so too can it reverse such scarcity by effecting structurally induced water abundance. The latter, i.e. the structurally-induced relative water abundance, is ‘the condition that exists as a combination of both a first-order resource scarcity and a second-order resource abundance’ (Turton 2000:117, 2003a, Turton and Warner 2002:55, Gleick 2000:135, Ohlsson 1998:7). One way of optimising available water usage is through alternative technologies for fresh water augmentation and irrigation methods such as sprinkler and drip irrigation (see Muraoka 1998).

Adaptive capacity, therefore, comes from the pressures a society faces and how it changes its perception about water, uses water efficiently, or reallocates water between sectors depending on sectors’ contributions to the well-being of that society. In this vein, the “virtual water” discourse is considered a distinct component of the social scarcity discourse (Turton 2000:119), where three adaptability stages are distinguished:

Virtual Water is a component of what has now become known as “The Triple Squeeze” or “The Turning of the Screw”. As water scarcity increases, the result will be a series of bottlenecks, primarily of a social nature. Each of these bottlenecks can be likened to a spiral, oscillating between an alternate scarcity of first-order resources (water) and second-order resources (social adaptive capacity). In this discourse, it is posited that not all states will be able to mobilize sufficient second-order resources with which to cope (Turton 2000:119-120).

The first squeeze is seen in the birth of the hydraulic mission of society, where the focus is on supply-sided solutions and the major management content is engineering nature, however, with water perceivably turning from a free good into an economic one (Turton 2000:120, Garduño 1999:69). In the second squeeze, marking another stage in water stress, ‘the new economic character of water gives rise to competition for this social good. Examples of this are competition between cities and rural areas for access to the resource base. Large cities, with their stronger economic base, can capture resources far more effectively than smaller rural communities’ (Turton 2000:120).

According to Turton (2000:120), one consequence associated with the second squeeze is the emergence of a social conscience, taking the form of environmentalism, as water scarcity turns to water deficit. ‘Due to increasing water pollution, shortages and conflicts among uses, users and geographical areas, a supply-oriented approach will lead to severe water shortages and reduced use options in the near future’ (Garduño 1999:69). Such development, in Turton’s (2000:120) view, invokes the early notions of water demand management, with the overall management function shifting from the pure engineering desire to increase water supply to embrace elements of end-use or allocative efficiency (Turton 2000:120, 2003b, Garduño 1999:69).

At the third squeeze, it becomes evident that engineering solutions are no longer viable on their own, and that the only way to effectively balance the water budget is to introduce a policy of intersectoral allocative efficiency – taking water away from agriculture where it has a low economic return and allocating it to industrial and domestic use where it creates far more jobs – and using Virtual Water as a component of this adaptive strategy (Turton 2000:120).

Thus, where lower levels of water availability are encountered, a shift of emphasis must take place from low value to high value crops and from agriculture to industry and services (Allan 1999a:3). At its optimal manifestation, this implies doing more with less through both improvement of the productive (or technical) efficiency of water use and the allocative (or economic) use of water (Allan 1999a:4). According to Allan (1999b:6), ‘it was suggested that productive efficiency is captured in the phrase “more crop per drop”. The concept of allocative efficiency is captured by the term “more jobs per drop”.’ (see Donkers 1997:150). Israel and Jordan are the illustrative examples, in this respect, where with 5 per cent of their water they generated 97 per cent and 93 per cent of their GDP, respectively (Allan 1999a:4). Pressing necessities always yield new reallocations of water. They cause a fundamental societal restructuring as people move from rural areas to urban environments and from agriculture to industry, where this restructuring requires considerable government planning and control, implying a high level of what Ohlsson refers to as “social adaptive capacity” or what Homer-Dixon calls “ingenuity” (Turton 2000:120, for details see Homer-Dixon 1995). This stage implies that the engineering ventures have either failed to keep up with increasing the supply of water or have caused natural disasters that have

contributed to generate scarcity, as with pollution, which can negatively affect even water-abundant environments. It invites the intervention of other disciplinary visions, if the condition of scarcity is to be averted. In short, it implies a sustainability vision. This vision is at the core of any “adaptation” strategy to which the social adaptive capacity owes its meaning. The global nature of the sustainability vision, however, implies synergies between the “domestic” and the international.

*Synergies between the “domestic” and the international*

From within the environmental scarcity framework, conflict over water at the international level seems highly unlikely. ‘Wars over river water between upstream and downstream neighbors’, according to Homer-Dixon (1998:208) ‘are likely only in a narrow set of circumstances’. Firstly, the downstream neighbour must be highly dependent on the river’s water for its national well-being. Secondly, the upstream neighbour must be able to restrict the flow of the river. Thirdly, there must be a history of antagonism between the two neighbours. Fourthly and which Homer-Dixon considers most important, the downstream country must be militarily much stronger than the upstream one. ‘There are, in fact,’ Homer-Dixon (1999:139) notes, ‘very few basins around the world where all these conditions hold now or might hold in the future’ (see also Homer Dixon 1998:208, Schwartz *et al.* 2000:83, Turton 2000:116). However, in connection to the above circumstances, the Nile is noted as the most obvious example (Homer-Dixon 1998, Turton 2000:116) (Chapter 1). To the above set of circumstances a fifth factor could be added, i.e. polarisation at the *national* level, yet with *international* repercussions. Peter Beaumont (1994:9) adheres to a view different from the one that asserts water as cause of war. He views water as ‘an important factor in determining a country’s foreign policy, but one which in itself is unlikely to cause a country to go to war’. In fact, against the “water war” thesis is the emerging strong belief that scarcity actually leads to cooperation and good neighbourliness among states. In fact, it is through intense negotiation and not through war or litigation that most water-related disputes are settled (Dagne *et al.* 1999:233). When competition reaches the point of crisis, the likely win-lose balance turns into a lose-lose situation, making the contestants likely to cooperate in order to surpass the ordeal. Frey (cited in Wolf 1995:88) states, ‘The tension and threat (of transnational water shortage) can apparently be resolved either by sharply escalating the conflict or by accepting the necessity of some form of cooperation. Dire conditions promote cooperation, but those same conditions also make severe conflict more likely.’ Below we shall discuss conditions which may sustain cooperation by making countries less vulnerable to the risks of scarcity through enhancing their own adaptive capacity.

In our understanding, the conclusion to be drawn from Ohlsson’s contribution is that looking into causes of water scarcity implies consideration of general eco-

conomic policies, power relations, and cultural aspects in a society's being. Intersecting with these aspects, adaptive capacity has been, presumably, the shield that has kept "water wars" at bay. Ohlsson (1998:8) provides for such an understanding by distinguishing between international and domestic water conflicts. Questioning whether the water-war perspective represents 'the most informed view of the future consequences of water scarcity', he draws attention to driving forces of conflicts *between* countries and *within* countries and to attempts to temper conflicts at both levels. Between countries the driving force for conflicts over water lies in attempts to increase supply. Attempts to manage the demand for water, for him, 'by definition will alleviate this pressure'. Similarly, 'the driving force for conflicts within countries at present are attempts to increase supply, resulting in competition between different sectors of society and different groups of population' (Ohlsson 1998:8).

Conflicts at the domestic level, however, are viewed as more precarious than those at the international level. Wolf and Hamner (2000:58) seem to associate conflict over fresh water more with localities. One of their findings 'is that geographic scale and intensity of conflict are inversely related'. Causes of domestic conflict remain murky though. However, key factors, according to Ohlsson (1998:9), are thought to be present in population increase, frustrated development expectations, and lack of adaptive capacity to manage shrinking per capita allotments of income and renewable resources, with water ranking high among that last. The potential of resource capture to exacerbate internal social conflicts is likely to be considerable, given that losing groups rarely regard such capture as legitimate (Richards 2002:17). A combination of frustrated development expectations and existence of clear borders of identity, exacerbated by continuing resource capture, are enough reason for heightened domestic conflicts. 'The existence of ethnic minorities or political sub-groups along major waterways, then may point... to regions with the potential for future hydropolitical stresses' (Wolf and Hamner 2000:63). How historically and currently ethnic or political sub-groups cooperate and whether there are injustices involved in their interactions are important factors in defining conflicts. How well or otherwise poorly the people affected can cooperate, according to Richards (2002:3), 'depends on a host of factors, including wealth and the presence or absence of *other* unresolved disputes' (*italics added*). Emphasising the importance of context and intervening factors, Richards (2002:3) suggests it might be helpful to compare water shortage to food shortages in history.

Food shortages have been endemic throughout history, but only occasionally did they contribute to political violence. When they did, such scarcities mattered. Any historian could easily demolish the proposition that "food shortages lead to revolt." Yet most historians of the French Revolution agree that food shortages, or still more importantly, *rumors* of food shortages (*la grande peur*) played a critical role in the complex of forces that culminated in the fall of the French monarchy... Water short-

ages are likely to be similar: their impact will be context dependent, and perceptions will be at least as important in driving outcomes as any “objective” assessment of water scarcity (Richards 2002:3).

Domestic conflicts in the modern world certainly have implications for international conflict. ‘[D]omestic conflict will probably affect other issues, including foreign relations. The resulting situation is unlikely to be smooth as domestic tensions make the resolution of international conflict more difficult’ (Naff and Matson 1984:195). The impact of domestic conflict could be felt more keenly in regions where ethnic minorities extend beyond the borders of one riparian into another riparian. Here again, water scarcity features as having an indirect role among other reasons which gather clouds for international conflict. ‘We are not talking about “water wars”, but about lingering conflicts between people which not only run the risk of resulting in small-scale violent confrontations, but also represent an additional burden on societies in some of the world’s poorest nations’ (GCI 2000:6 see also Wolf and Hamner 2000:58). Lingering conflicts between states can deepen feelings of hydro-nationalism and the latter can lead to hydro-conspiracy with water scarcity serving as a pretext.

However, this is no reason to believe that a conflict caused directly by scarcity is unlikely to take place:

The fact that water scarcities have not, in the past, provoked large-scale social violence is no guarantee that violence will not occur if the scarcities are serious enough and if they occur in a context of distrust and anger over other, perhaps entirely unrelated, issues. “Water wars” may not be coming, but conflicts in which water plays a role are quite likely. Nonlinearities can harm as well as help (Richards 2002:3).

It is the nonlinearities – the risks – which Falkenmark (1997) warns against, particularly as they are associated with a growing complexity of water-related issues. Donkers (1997:137), while emphasising that there is no region in the world with such accumulation of water conflict-enhancing factors as the Middle East, asserts, ‘Wars over water are not and have not been ruled out.’ Waterbury (2002:10) warns that ‘to suggest that war is not a likely outcome of water disputes... is not to deny the passions that international water quite legitimately arouses’. This becomes unpredictable precisely because of the new *risks* involved.

In light of the above, the important question is how or whether “environmental scarcity” and “social resource scarcity” cause “water scarcity”. In a domain of structural inequality, extraction of “virtual water” from the powerless (e.g. traditional farmers and pastoralists) can take place for the benefit of the powerful (elite and urban dwellers). Overwhelming the farmlands and pasture niches to meet this extraction might lead to depletion of the resources in regions which produce “virtual water”, especially given that no support is reciprocated to them. In other words, persistence of resource capture or the capturing of the produce of farmers aggravates environmental scarcity. In the words of Richards (2002:22), failure to

agree on the initial distribution of water rights can jeopardise any measures aiming at inducing conservation and with rising scarcity land disputes can easily impede the adoption of technically sensible proposals for improving water management. Socio-political disputes of this form can ripen in the form of ecological problem. Disputes spill more serious impacts when they take the form of civil strife with its impact on the physical environment as well as on those who guard it. Such disputes can be grasped by illuminating power relations within the basin (i.e. between upstream and downstream) and between the basin and its surroundings. The former dimension, i.e. upstream/downstream, is a classic case for study, however, as an inter-state issue – *not* involving intra-state issues. The latter dimension has scarcely been touched, and there has probably been no case study conducted on it so far. The following section shows the above-conceived dynamics in connection with spatial dimensions – how the river (RZ) is conceived in relation to its surroundings (NRZ) and how the river's downstream relates to its upstream, viewed through a lens of intra-state dynamics.

## 2.4 Spatial dimensions of water scarcity

This section employs insights from the above discussion to delineate the relationship between the RZ and the NRZ. Thus, it draws upon concepts such as “integrated river basin management”, “integrated watershed management” and “hydro-solidarity” and the legal concept of “equitable utilisation” as concepts to help delineate the relationship between the RZ and the NRZ. The objective is to clarify whether it is scientifically justifiable in the study of rivers to consider the regimes of generating “structural inequality” and “environmental scarcity” in watersheds adjacent to such rivers (in the NRZ) and whether these cause internal disputes which escalate to the international level.

Since water – in the “virtual water” form – represents the gain of one region, it is also the “loss” of another. Economically speaking, “virtual water” exchange makes gains for both water-stressed and water-surplus regions – an import/export relationship. Environmentally speaking, however, the case might be different. One region might be *overwhelmed* by producing “virtual water” for other *powerful* regions, and therefore suffer soil degradation and a consequent diminishment of agricultural productivity and perhaps famine and mass displacement of its population. These processes, as elaborated below, affect the partitioning of water between regions in a river basin with negative consequences to overwhelmed regions and possibly (short-run) positive outcomes, such as increased water flow, to the powerful downstream.

Thus, it is our argument here that while “virtual water”, at the international level, makes for gains (comparative advantages) in both water-stressed and water-surplus regions, it may cause a loss on the part of some regions or localities at the national level. Consider, for instance, a mass displacement/migration of groups of population to a downstream region inside one country, where this dis-

placement/migration occurs as a result of recurrent droughts in an upstream watershed that, in normal situations, has sufficient rains for cultivation. As these internally displaced persons (IDPs) used to benefit from rains in their upstream region, their migration downstream causes a “loss” of the rains from which they used to benefit. If the recipient region is dependent on irrigation, which is often the case in arid regions undergoing recurrent droughts, then a degree of “loss” of “virtual water” from the rainfed sector occurs. We refer to such non-utilisation of *rainwater* caused by depopulation of a region as a “loss” because it is part of the national water budget for production that should be optimised. According to Sandra Postel and J.A. Peterson (1996:24), ‘If the battle on the agricultural water front is to be won, crop output per unit of water input will need to increase not only in *irrigated farming* systems, but in *rainfed* and *water-harvesting* systems as well’ (italics added). The simultaneous harvesting of *rainwater* to add to the *river water* is crucial for overcoming water scarcity. In other words, there is no reason to confine water supply to exploiting river water, neglecting utilisable rainwater falling on the headwaters of the river (upstream RZ) and/or that falling in the NRZ in as far as we are dealing with *one ecosystem*. Nor should views on water supply be confined to one part of a country neglecting the other parts, as we are dealing with *one socio-political system*. Spatially, the RZ and the NRZ, and the downstream and upstream are complementary, and overcoming water scarcity necessitates paying attention to the dynamics of each.

#### 2.4.1 The “river basin” as unit of analysis

Considering *spatial* development and management of international water systems, scholars have debated the “river basin” or “watershed” scale, both of which have long been considered the proper unit of analysis. Inherent to an institutional approach, it is believed that ‘any strategy to address water scarcity must employ basin-wide integrated planning and management’ (McCaffrey 1997:53). At both the national and international levels, water resources are viewed as best protected and managed as a unit, referring to the drainage basin as a whole rather than parts thereof (McCaffrey 1997:53). ‘[A]ny water use in each riparian country should be managed from the viewpoint of maximizing the benefits of the entire catchment’ (Nakayama 2000:67).

The concept of “integrated river basin development” goes back to the 1930s when basin-wide planning was adopted in Europe and the United States. The aim at that time was to stimulate employment and recovery (Mageed 1981, see also Beaumont 2000:477). This approach, by emphasising the (international) drainage basin, meaning ‘the whole geographical area which is shared by two or more states and is bounded by the watershed extremities’ (Mohamed 1984:1), has certainly gone beyond the boundaries of the “international river” and the

“international river system”.<sup>1</sup> ‘At the beginning, the basin-wide concept was concerned mainly with water resources development, taking the river basin as a hydraulic unit. The concept was then developed further to include the view that a river is also an economic unit, though this view caused controversy amongst economists in the developed countries’ (Mageed 1981). Such a vision was induced by certain dynamics that hold the concept of “integrated river basin management” as theoretically acceptable and the approach, according to Beaumont (2000:477), environmentally, ecologically, economically, and socially sensible. It has therefore attracted international water lawyers. The latter represents a prominent group shaping the discourse about international river waters.

The concept of “watershed development” emphasises the same scale and considers the interactions among different components inside the river basin. Going beyond economic utility, ‘[t]he key to protecting and restoring rivers lies in treating with care and respect their *entire watershed*. Thinking on the watershed level means seeing rivers as integral parts of a complex dynamic system of land and water and biota’ (McCully 1996:312, italics added). Rivers are considered both systems and sub-systems of a wider ecosystem. Emphasising the uncontrollability of what is considered “wild”, “unruly”, and “wasted” rivers, McCully (1996:312) points out that thinking on the watershed level means adapting to the complexity of interactions between land, water, and atmosphere ‘rather than making counter-productive efforts to control and simplify it. It also means respecting the diversity of *different watersheds* and the natural and human communities that live within them’ (italics added).

### *Going beyond the river basin perspective*

Although viewing the river basin as the proper unit of analysis and pursuing an “integrated river basin development” may have revolutionised the understanding of dynamics in international river basins, they in fact established a *territorialised* concept of the river basin, which excludes all that is beyond the basin. This conceptualisation would certainly dam any proper understanding and therefore proper management of international river water resources. However, attempts to figure out the interactions between a river basin and what is beyond it seem to be gaining momentum. Conway, Krol, and Hulme (1996:336) provide for a much wider scope than the basin/watershed approach, where attention is paid to environmental driving forces which influence the availability of water in a river basin, including the immediate neighbourhood as well as impact from areas beyond the river basin or watershed. These driving forces operate at three levels: global, re-

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1. International river is one among three categories of international rivers, the other two being international river systems and international drainage basin. International rivers, according to Mohamed (1984:1) was divided into, first, contiguous or boundary rivers, which flow between the land territories of two or more states, and, second, successive rivers, which flow from the territory of one state into the territory of another. The international river system consists of the international river itself, its tributaries, lakes and canals (Mohamed 1984:1).

gional, and river basin. While the first level takes the form of “climate change”, the second is related to “land-use change” and the third is about “water resources management”. The global driving forces present in the atmospheric and oceanic effects, in fact, affect all continents. However they are not territorially controllable or precisely predictable. Yet shared responsibility in managing the atmospheric and oceanic commons in a sustainable manner or benefiting from them equitably seems to receive some due consideration (for details see McCaffrey 1997:58) The regional driving forces are seen in the regional economic, demographic, and agricultural development trends that drive the *regional demand for food*. It is this level which brings the RZ and NRZ together as one unit. While river discharge is viewed as being determined by both global and regional driving forces, the driving forces at the river basin level are seen in the form of policy that determines water-use efficiency and in means of enhancing the availability of water (Conway, *et al.* 1996:338-40).

Significant to this scope is an inquiry into and beyond a river’s watershed – to look into the river as well as into the dynamics taking place far from its banks, within and beyond its watershed, including those that cause changes in land ownership and land use and possible hindrances to benefiting from rainwater. It is to go beyond water *per se*, towards relationships between drylands and rivers, between the wetter parts of the river that depend on rainfall and those dry parts that depend on irrigation in association with investment allocations, between the river and its watershed (wet and dry) on the one hand and other watersheds on the other. In other words, it is useful to situate the river in the wider regional interactions (Figure 2.1a), and this certainly crosses national borders and other watersheds borders, expressing a much wider complementarity. In our view, seeing the dynamics in such a wider scope, which in addition to the “fish eye” i.e. to see both inside the water (and the water course) (Hoekstra 1998) necessitates an “eagle eye” to see into the expanses surrounding it. Two analytical breakthroughs help provide this pair of “eyes”. One is Tony Allan’s concept of “virtual water”, which we detailed earlier, and the other is Malin Falkenmark’s concept of “green water”.

The concept of “green water” shows that the conventional water resources approach probably presented only a partial picture. ‘The most fundamental expansion from a conventional water resources approach is the *introduction of green water* – [i.e.] water vapour flows – besides the blue water [i.e.] liquid water flows in rivers and aquifers on which past discussions have been focused’ (Falkenmark 1999:23, italics added, see also Wouters 1999:80-81, Gleick 2000:130-133). It has been argued that, society directly benefits from both “green water” and “blue water”. From the former it acquires biomass production (food, fibre, pasture, fuel wood, and timber), and from the latter it accrues societal water uses (water supply for industry, irrigation, and hydropower). Society also benefits indirectly through a multitude of ecosystem services provided by both types of water (Falkenmark 1999:22, see also Falkenmark 1997:39). ‘A recent estimate on mankind’s dependency on green water flow for the generation of necessary ecosystem services from major terrestrial

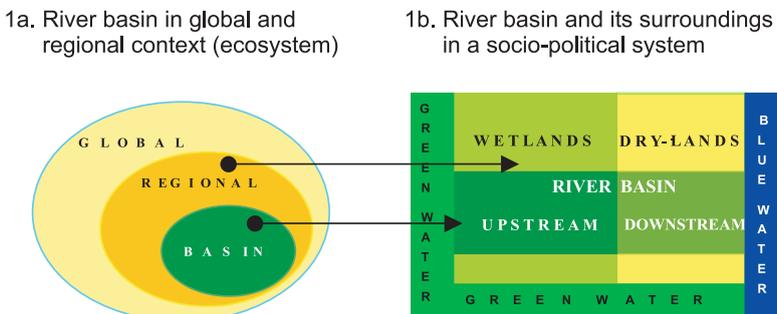
biomes (forests, woodlands, wetlands, grasslands, and croplands) indicate that humanity already relies on 88% of global water vapor flows from continents' (Rockstrom 1999:13). In short, both "blue water" and "green water" must be considered in the debate about water scarcity and the conflicts it might cause.

Using the two concepts of "virtual water" and "green water", Turton (2003b) provides an elaborate framework which accommodates the schema portrayed by Conway *et al.* (1996:336-40) noted above. The two-partite Figure 2.1 is our attempt to illustrate the position of a river basin in regional and global contexts and the exchanged impacts (Figure 2.1a) as portrayed by Conway *et al.* (1996:336-40), and the complementarity between "blue water" and "green water" (Figure 2.1b) as presented by Falkenmark. As Figure 2.1b suggests, "green water", can be part of the river catchment or in the surrounding lands, both drylands and wetlands.

Both Falkenmark and Allan and, necessarily, Turton (2000, 2003b) criticise the conventional approach of focusing on the river basin. Instead, the trend towards integrated water resource management (IWRM), according to Turton (2003b:10), 'suggests that we should revisit the paradigms that serve to guide our thinking of the way that management structures are designed.' In our view, the river basin as unit of analysis is harmonic/inherent in the systemic analysis and therefore commensurable with the state-centric epistemology. In Turton's view, revisiting the hydrological cycle, by way of contextualising in it the "virtual water" discourse, may allow for challenging the prevailing IWRM paradigm and push the envelope of new knowledge farther. For him, new ideas are needed to counter local water scarcities so they do not become a limiting factor to the economic development potential, especially in the Southern Africa Development Community (SADC).

The "trade domain" adds analytical value, primarily in what we discussed earlier in connection to the "virtual water" discourse. However, importantly, what should be emphasised here is the association with water partitioning. Thus, the 'trade domain', according to Turton (2003b), is where 'national-level water deficits can be ameliorated by virtual water trade', where the latter 'mobilizes "green water"'. In the "trade domain", the focus is 'on the green water fraction of the hydrological cycle, in particular, mobilizing water from regions of relative water

Figure 2.1: Position of a river basin in regional and global contexts and the exchanged impacts



abundance in order to balance localized water deficits as they occur'. We noted earlier that it straddles "problemsheds". Insight from that last, according to Allan (2003:3-4) 'forces us to shift the analysis from a hydro-centric focus to a comprehensive approach embracing the political economy and other relationships that are part of operational water allocation and use'. A central issue here is the relative advantage of specific productive modes, with globalisation dynamics playing a major role. Mikiyasu Nakayama (2003:17), emphasising the practical nature of "virtual water", states that the concept 'has been drawing increasing attention widely as an analytical tool to rethink the issue of water scarcity and water conflict'. In this respect, "virtual water" is considered 'an important component of water management' (Chapagain and Hoekstra 2003, Nakayama 2003). The concept "virtual water", is thus pregnant with insights, particularly if we expand it to include the environmental impacts resulting from the exchange of "virtual water". However, the essential issue here regards how the latter mobilises "green water".

The connection between "virtual water" and "green water", or the mobilisation of the former to the latter, makes the structural and essential link between the "trade domain" and the "natural domain", whose conceptualisation is well developed in the writings of Malin Falkenmark, as we shall elaborate later. Similar to what Conway *et al.* (1996:338-40) pointed out earlier, the "natural domain" 'embraces aspects such as global climate change, natural climatic variability, ecological water, precipitation, natural flows and fluctuations in those flows' (Turton 2003b:11). A brief note about the structural link between the "trade domain" and the "natural domain" is due here. According to Gordon and Folke (1999:34), the estimated ecological footprint of 85 million people in the Baltic drainage basin, namely in connection with food consumption, 'reveals that the wellbeing of people from the 14 nations in the drainage basin not only depends on indigenous ecosystems and freshwater availability, but also on the productivity of ecosystems of other nations and their freshwater resources'.

This perspective, which considers wider regional impacts in connection to perceived water scarcity, is well presented by Falkenmark (1997:38), viewing Europe as a region 'surrounded by regions with larger water problems' – regions, which, to our understanding, are composed of numerous and diverse watersheds. She notes,

in the south a highly water scarce region with rapid population growth and increasing water dispute proneness and in the east a highly polluted region with deteriorating life quality conditions, manifested in rising health problems, large economic problems when it comes to the ability to cope with manifested side effects of past waste mismanagement (Falkenmark 1997:38).

An important conclusion is the conspicuous dependency of a river basin on its surrounding of watersheds. Gordon and Folke (1999:34) argue, '[E]conomies are dependent not only on imported goods from other countries but also on the support

capacity of other nations' ecosystems and freshwater sources for the production of these goods and services.'

The above complementarity has been scarcely studied in connection to specific cases of international rivers. Among the pioneers highlighting socio-economic and natural resources dynamics in association with a river basin by considering the "global" and "regional" dimensions was Davies in a 1984 article entitled *Continuity and Change in the Nile Valley: A Geographical Viewpoint*. In his attempt to 'explain the element of "continuity" amidst the apparent "change"', Davies (1984:135) refers to 'four components of life in the Nile Valley'. These are 'the desert; the Nile; the Nile Valley's relationship with the outside world; and relationships within the Valley itself'. This classification is of great methodological value and is thus essential for understanding the regime of an international river. For our study it is important to understand the power dimension embodied in these interrelationships; therefore, such classification helps us explain the power relationships – the "geopolitical" interactions – between the river on the one hand and its surroundings on the other and similarly between its downstream and its upstream.

#### *De-centring the river basin perspective*

This section seeks a further sensitivity within the "domestic" – sensitivity essentially in connection to the absented and silenced component, namely the space-specific ecosystems, the localised watersheds.

The dependence/complementarity noted above allows for the further investigation of the relationship between "land" and "water", as inherently associated resources, not only in the river basin, but also with other watersheds surrounding it and certainly in connection to differences between downstream and upstream land-tenure systems. Land and water in fact, reflect the structural link between the "trade domain" and the "natural domain". A pioneer study, *African River Basins and Dryland Crises*, which involved contributions by a group of scholars, edited by Darkoh (1992), brought to attention the more synergetic relationship between the river and its dryland surroundings, carving out room for understanding ecological impacts as well as the power dimension. It precisely points out the dynamics and what we may refer to as the "pull" relationship between the river and its *economically-marginalised* and *environmentally-stressed* surroundings and potential conflict between them. While Darkoh (1992) emphasises the stress that rivers undergo in Africa's drylands, Mohamed Salih (1992) focuses on the impact of drylands on river basins and the possible ecological and socio-political stress they may imply.

Drylands, and for that matter wetlands, may be part of a river watershed, but also could be part of other watersheds neighbouring such a river. In Figure 2.1b this is conceived for purpose of simplification in the form of wetlands that are crossed by the river upstream and they are larger than its basin, and similarly the drylands is crossed by the downstream part of the river basin and is larger than it in territory.

Environmental and socio-political factors, as we shall explain below, have structurally reshaped the relations between drylands (including the downstream RZ) and wetlands (including the upstream RZ).

Development of the downstream RZ, especially in modern times, has perpetually operated as a “pull” relationship and, therefore, has increased pressure on rivers, while at the same time often inflicting harm on the drylands.

Local pressure of people in river basins throughout the drylands of Africa has increased because of the unprecedented demands on their resources following recent population explosion and *mobility of people from drought-hit drylands*, expansion of irrigated agriculture and resettlement schemes, and acceleration of urbanisation and industrialisation which requires more water and electricity (Darkoh 1992:1, italics added).

Dynamics on the ground show the flow of people from drylands and the upstream watershed to the downstream, specifically to river banks. In an overview paper titled *African Dryland Crisis and the River Basins*, Mohamed Salih (1992) provides some interesting insights on the relationship between rivers and their dryland surroundings, namely their ecological complementarity, yet conflicting interests that arise between groups in two such domains. According to him, ‘African drylands and river basins represent a complementary ecosystem highly responsive to natural and man-made influences’ (Mohamed Salih 1992:13). He adds that ‘Apart from ecologically affecting each other, the river basins and the drylands have the potential of nurturing divergent societal and economic interests which may trigger off *political conflicts* between groups and even between states’ (Mohamed Salih 1992:14, Darkoh 1992:5, italics added). Spatial relationships conceived of between “drylands” and a “river basin”, unlike those of “downstream” and “upstream”, have scarcely been studied so far.

Darkoh (1992:3) makes some necessary connections between what is going on in river basins and their surrounding drylands. ‘Many large-scale mechanised schemes, irrigation projects, resettlement schemes and big dam projects have taken away lands traditionally used by pastoralists during drought to alleviate pressure on the fragile dryland environment.’ Economic uses of water can cause resource capture, therefore, ecological marginalisation. ‘Since the value of water is often capitalized into the value of land, conflict over the justice of the land distribution will, almost inevitably, be translated into conflict over water rights’ (Richards 2002:22). To be seen as the intermediate capital for a region in contrast to others, water can affect land rights in areas far from the domain where it flows. However, similarly, water is affected by its surrounding lands. One emerging challenge, which may show the synergies between land and water, certainly reflecting the complexity of water issues, is that ‘[w]e now want to know not only what is the quantity and quality of water in a stream, but also from where any contaminants came and where best to invest scarce financial resources to help rectify the prob-

lem' (Grayson *et al.* 2002:1314). Increasing adherence to the conception of complementarity itself reflects the state of knowledge being reached, namely the increasing availability of data and the new environmental awareness associated with it (for details see Grayson *et al.* 2002:1313-14), which stimulates critique of prevailing knowledge.

We noted above that the conventional approach to water issues has increasingly been challenged by critics. Jan Lundqvist (1999:62-3) points out that links between water utilisation, water flow, and water quality parameters have largely been missing in discussions on water resources management. Malin Falkenmark (1997:39) hints that conventional approaches to water management are Eurocentric, or to be more precise, temperate-zone-centric, so to speak. She notes, 'The old models based on hydraulic engineering and the predict and provide philosophy are vastly insufficient. They have been inherited from the temperate zone, often well endowed either with water or with engineering know-how and financial resources for water transfers.' These models, in her view, 'do not address the issue of how to share the rainfall over the basin.' She calls for a 'paradigmatic shift in the approach taken to water in societal planning' (See also Turton 2003a:3-9, Gleick 2000:130-3, Donkers 1997:150).

Falkenmark (1999:27) advocates that 'the river basin approach has to involve attention not only to direct and indirect *freshwater services*, but also to water-related *ecosystem services*, terrestrial as well as aquatic, and direct as well as indirect'. This is necessary because these services complement each other. In Falkenmark's (1999:27) view, 'societal freshwater and ecological services will have to be seen in a river basin perspective within a new *hydrosolidarity* thinking' (italics original). Recently, the Stockholm International Water Institute (SIWI) Seminar helped develop this concept of "hydro-solidarity", 'where water is shared equitably both upstream and downstream in a river basin' (SIWI 2001). Falkenmark (1997:39) better reflects this new concept in an early work in which she emphasises the need to consider 'all of water's parallel functions in both society and landscape, such as aspirations for self-reliant biomass production, upstream-downstream equitable share, intergenerational equities, etc.'

Crucial to this vision, in our view, is seeing the exchanged impacts between the river and its surroundings; a complementarity which scholars recently came to emphasise, particularly in relation to land use (see e.g. Falkenmark and Lundqvist 1999, Falkenmark 1997, Darkoh 1992, Mohamed Salih 1992). 'Changes in land use will lead to changes in rain-water partitioning and thus in the amounts of "green" and "blue" water, [i.e.] the fractions of rainfall that will be available as soil moisture (green water), groundwater, surface flows (blue water), etc.' (Falkenmark and Lundqvist 1999:131, see also Falkenmark 1997:22-3). Vegetation changes upstream, in Falkenmark's (1999:27) view, generate 'flow consequences for downstream fresh water and ecological services'. Falkenmark (1999:21) argues that 'plants are not just water wicks transmitting a water flow to the atmosphere, but active in the water partitioning itself'. Such insight, according to her,

has made it more and more evident that what has to be shared between those upstream and those downstream in a river basin is not the water currently going in the river as codified by the Convention on Non-navigational Uses of International Water courses,<sup>2</sup> but rather the rainfall over the river basin (Falkemark 1999:21, Falkenmark and Lundqvist 1999:131).

The insight provided by this statement heralds a shift to considering the localised “watershed scale” or, more precisely, ‘*precipitation* over the catchment’ (Falkenmark and Lundqvist 1999:131, italics added) instead of the conventional approach, where ‘the tendency has been to focus on the risk for regional conflicts over shared *river water* (on [a] river basin scale)’ (Rockstrom 1999:12, italics added). In fact, very limited attention, as Rockstrom (1999:12) argues, ‘has been given to the role of water management on a watershed scale in preventing social disruption and rural exodus, and the disaster mitigation achieved by paying more attention to the sharing of rainfall where it falls’.

Categorisation of water into “blue water” and “green water” represents a radical shift in the debate on how spatial development in river basins is conceived, as attention has traditionally been paid to “blue water”. Essentially, this vision enables us to consider the maintenance/disturbance of the water balance by considering the relationship between downstream and upstream and/or between the NRZ and the RZ. Disturbance of a water balance may lead populations to concentrate and manifests clearly in the increasing use of water for artificial irrigation instead of using “natural irrigation” or precipitation. Artificial irrigation or engineered irrigation involves a number of global environmental problems such as low efficiency of water use, salinisation, construction of thousands of barrages and reservoirs, and sedimentation of reservoirs which reduces the water they hold (Saeijs and van Berkel 1997:14, see also Kiss 1997:61). In other words, artificial irrigation may reduce the water available for use and turn soils unproductive. Though irrigation is intended to solve the problem of water scarcity, as Von Benda-Beckmann *et al.* (1997:225) would argue, it ‘can only do so to a limited extent while it creates its own scarcity and competition problems’. The circulation of “green water” does not cause such problems.

The “institutional domain” is crucial in determining whether a resource use/allocation regime is sustainable. According to Falkenmark and Lundqvist (1999:132), changes in land use through clearing, tillage, and drainage in order to allow biomass production and harvesting and changes in water use through digging and drilling of wells and construction of pipelines, canals and reservoirs to make water accessible when and where it is needed affect not only hydrological parameters. Rather, intended benefits in terms of production of food and other goods are associated with often unintended and unanticipated environmental impacts which invariably are detrimental in some respect (see also Gordon Folke 1999:35). These

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2. This convention was to conclude the efforts which started since 1970 by the UN’s ILC and was finally adopted in 1997 by the UN General Assembly (detailed further in Chapter 10).

could be experienced both at the level of the local watershed and at the level of the basin at large. Changes and intensification of land use tend to reduce soils' infiltration capacity and water-holding capacity, and by exposing roots to dry spell-related plant damage they cause reduction in plants' water uptake capacity (Falkenmark 1999:23, Falkenmark and Lundqvist 1999:132). Essentially, in association with "resource capture" and consequent "ecological marginalisation", soil degradation can be serious and increases in eroding surface runoff would certainly be tangible. Disturbance of the water budget is often seasonal in nature, whereas the above changes, according to Falkenmark and Lundqvist (1999:132), 'amplify the seasonal pattern of surface water flows, i.e. an increased risk of floods in connection with the rainy season and desiccation during the end of the dry season'. The authors note that agricultural droughts are becoming a serious problem, even when there is no meteorological drought, i.e. when crops suffer from deficits of soil moisture while in fact there is abundant rainfall. We shall refer to this as "loss" of rainwater. Drainage practices, climate change, and destruction of tropical forests rob rivers of their natural buffers, therefore damaging rivers' hydrology by reducing their capacity for water retention. This may lead to extremely high water levels and flooding (Saeijs and Van Berkel 1997:16-9).

In the Australian wheat belt, as Gordon and Folke (1999:36) note, the increasing demand for production of food and fibre resulted in substantial deforestation of the native scrub and woodlands. These woodlands, according to them,

have low rainfall (roughly 375 mm) and very low, almost none, runoff. Organisms vary in the way they capture and distribute rainfall. The woody vegetation of these woodlands is efficient in catching rainfall (by interception) and distributing it in the ecosystem. The vegetation captures and participates in the partitioning of up to 70 per cent of rainfall that reaches the vegetation.

In connection with the above description, it is important to emphasise that these watersheds have 'very low, almost none, runoff'. This is particularly important in that the "green water" in this example contributes significantly to the national resource budget through biomass production. Depleting such niches and turning "green water" to "blue water" might not add much "blue water"; or, even if it does, its output might be insignificant to the significant contribution previously made by productive vegetation and biomass. Utilisable water is larger in volume when distribution of water, i.e. the balanced partition of "green water" and "blue water" is naturally sustaining. In this respect, turning "green water" to "blue water" might cause a loss. Loss due to disturbance of the water partition can be categorised in three forms: decrease in physical size of the water flow; raising of water tables and, therefore, rendering land in some areas less productive; and polluting resulting from population concentration and irrigated agriculture.

Unintentional side effects associated with the use of fresh water do not always occur in the direct vicinity of intentional ecological processes, such as land-use

conversion and intensification of crop production (Gordon and Folke 1999:35). According to Gordon and Folke (1999:35), 'Due to the interdependencies of fresh water flows and ecological processes, side effects from changes in partitioning of water flows due to e.g. land-use changes or changed water availability can cascade over long distances, in what we call *ecohydrological causal chains*. There are side effects, sometimes transboundary, created in the catchments.' These side effects explain the above-mentioned three aspects of loss of "blue water".

Firstly, the physical amount of "blue water" flow can be reduced, e.g. '[w]hen blue water is used for irrigation the part consumed by the crops [represents] a blue-to-green redirection of water. The evaporative losses from [e.g.] canal and conveyances that are involved in the irrigation system add to such redirections' (Falkenmark 1999:26). This redirection is what would ultimately reduce the quantity of "blue water" downstream (see Falkenmark 1999:26, Falkenmark and Lundqvist 1999:132).

Secondly, "blue water" could be lost due to an added "blue water" flow that might be harmful.

When the shrub and woodlands were replaced with annuals that only transpire during 4-5 months and have shallow rooting structures, an increase in runoff and thus a rise in water table were the consequence. Current estimates are that up to 25% of all cleared land can be so affected that they cannot be used for cereal production within the next 50 years (Gordon and Folke 1999:36).

The last cause of decreases in "blue water" will be discussed later under the heading of urbanisation and population concentration (section 2.4.4).

#### **2.4.2 Legal regulations in river basins and relationship with their surroundings**

RZ lands are considered to be more valuable. 'More than any landed resources in sub-Saharan Africa, the river basins have attracted the attention of national governments, international capital and individual foreign and local investors' (Mohamed Salih 1992:16, see also Darkoh 1992:3). Very often river basins provide for large-scale agriculture, therefore, laying the foundation for a (new) economic core, which like elsewhere, often helps initiate uneven development processes. These ultimately, especially in association with increased aridity, cause the overwhelming of the river basin downstream with new demands for water.

Increasing aridity increases the importance of watercourses crossing arid lands and reinforces legal and power regimes. Increased aridity becomes a cause of population congesting in river zones, therefore, heightening competition among inhabitants in these zones, on the one hand, and between these inhabitants and newcomers pushed to these areas by hardship in drylands, on the other hand. It has been noted that the most densely populated parts of drylands are urban areas and those areas that depend on irrigated agriculture (Williams and Balling 1996:11). As a

general rule, groups or societies peopling the banks of dryland rivers develop special awareness of rules and regulations that organise accessibility to resources and acquiring rights to them. Referring to downstream/upstream states' relations, John Waterbury (2002:28) provides some insights in this respect. He states that 'because rainfall or snowmelt was more abundant than in lower reaches, upstream population tended not to make direct use of the watercourse itself. Acquired rights were asserted and prior appropriation claimed most often by those situated downstream,...as *their territory typically contained the seat of government and legislative authority*' (italics added, see also Beaumont 2000:477). Joseph Dellapenna (1997:129) points out that 'the gentler slopes lower down in the basin allowed easier farming (with or without irrigation) and invited urbanization and development, while the lesser gradients of flow allows for easier navigation. The development of human use therefore usually occurs in the lower basin earlier and faster than in the upper basin.' Upstream, water is valued as part of the riverain environment, primarily for its aesthetic appeal and perhaps for its recreational role, while downstream its value for economic purposes becomes paramount, e.g. to meet irrigation, urban, and industrial needs (Pigram 1999:105).

Such differences have made downstream communities (or for that matter, states) evolve differently compared to upstream ones. This has established a paradigm, of "downstream-centrism", which saw in any significant uses of water upstream a source of possible harm to downstream, giving credibility to the legal principle of "no harm" for the downstream in international water law. Dellapenna (1997:129) notes, along with Patricia Wouters, that 'the hydrologically "weaker" state is usually in the stronger position'. Dellapenna (1997:130) continues,

[B]ecause the lower basin state is typically more economically developed than an upper basin state, it can offer various forms of aid as incentives for cooperation by the upper basin state. Lower basin states can also deploy legal and political, as well as economic, resources to impede or even to block the upper state's development plans.

### *Rivers in international legal context*

Keen efforts to develop rules to organise relations amongst countries that share water sources started in the 1960s with the aim of protecting riparians from harm while achieving equitable use and benefit. Reconciling the two principles of "equitable and reasonable utilisation" and "no-harm" remained problematic, bedevilling the promulgators of international water laws (Tafesse 2001:69). This has been the case with respect to both the rules developed by the private professional International Water Association (ILA) known as the Helsinki Rules (Okidi 1997:170) and those initiated by the UN International Law Commission (ILC) which starting in 1970 and continuing for more than three decades aimed to codify the rules of water uses in transboundary basins (Waterbury 2002:27). The ILA adoption of the Helsinki Rules in 1966, in the view of Okidi (1997:170), 'seems to have had a special impetus on the broad recognition of several principles'. Of such principles, which

may have governed hundreds of bilateral or multilateral agreements on international basins, Okidi (1997:170) lists four key principles accepted to various degrees by states. These are, firstly, the ‘obligation not [to] cause harms to other riparians’; secondly, ‘prior notification of intended projects’; thirdly, ‘equitable appropriation or sharing of waters of the basin’; and finally, ‘cooperation in integrated management of the basin and its natural resources’. Among these principles, the “equitable utilisation” principle has acquired increasing appreciation and procedures have been enhanced to reconcile it with the “no-harm” principle, especially in the recently adopted 1997 ILC’s “Non-Navigational Use of International Watercourses” (see Dellapenna 1997:123). This appreciation is also evident at the domestic level. In a paper titled *Inter-states Water Disputes in India: An Analysis of the Settlement Process*, Salman Salman (2002:236) notes that the principle of reasonable and equitable utilisation ‘has been the guiding rule for the different tribunals in their attempts to reconcile the conflicting claims of the riparian states’.

#### *Rivers in the national legal context*

Whereas some legal norms apply internationally and in advanced societies with developed institutions for managing resources, in less developed societies water resources are often left to the whims of centralised governments with their authoritarian development beliefs. Power relations reshape resource use, often to the benefit of the dominant elite, therefore, shaping legal relations between downstream and upstream. Riverbanks, particularly in arid regions, are hotly contested arenas. Hence, in our understanding, expropriating lands along riverbanks by the state for resettlements or large-scale agriculture is not always attainable.

*The old-aged land tenure systems prevalent in the river basins, unlike those of the communally used drylands constitute major obstacles for large-scale settlements. Although such ventures are still possible in areas where coercive governments get their way against any local resistance, experience has shown that such schemes are apt to encounter continuous conflicts which have serious drawbacks on their performance (Mohamed Salih 1992:16, italics added).*

Apparently, it is in the domain of “communally used lands” where states pursue large-scale projects without or with less resistance, and it is this relative ease of appropriating these lands which represents the major cause of the drylands crisis.

Theoretically speaking, where it is often the case that the seats of power in drylands are located on the banks of rivers (RZ), the tenure systems of the latter are more secure, while those in adjacent NRZ regions are often left at the disposal of the powerful elite to be managed or mismanaged. Dubbed “communal lands” they are part of the state domain – an “open frontier”. They can be used for large-scale projects or for resettlement of populations whose lands were captured for irrigated agriculture in the RZ. The relationship of dryland rivers and their surroundings is, therefore, one of coercion, extraction (resource capture), and therefore, ecological

marginalisation. Excessive cultivation of drylands resulting from the introduction of large-scale production of cash crops and accompanied by rapid growth of population 'created food deficits in previously food surplus areas and hence precipitated pressure on land and militated against any careful utilization of resources' (Mohamed Salih 1992:14).

Thus, drylands, especially under a modernisation regime, are more prone to degradation and their systems are, therefore, more prone to collapse, leaving their historic inhabitants/"owners" the option of moving to river basins (see Abu Sin 1995). Darkoh (1992:3) notes that river basins, as key production niches in drylands, give rise to various land-use conflicts the outcome of which, in the example of Kenya, is the marginalisation of the weakest of the sectors, i.e. pastoralism. As their marginalisation 'prevails in the arid and semi-arid areas the pastoralists have to utilise more extensively and, at times, over-exploit the range and water resources available to them in marginally productive areas. This causes environmental degradation of this marginal land which, in turn, further pushes the pastoralists to seek pastures in the more arid zones' (Darkoh 1992:3). At a certain stage of this continuous push into marginal lands the system collapses and pastoralists and, for that matter, other rural communities with whom they developed symbiotic relations engage in mass migrations out of their homelands. 'Faced by a rapidly rising population, recurrent droughts, inadequate and unreliable rainfall, hunger and famine, it is to the river basins that most people in drylands of Africa are turning for salvation' (Darkoh 1992:2).

#### **2.4.3 Population concentration as stirrer of prevailing RZ (water/land) ownership patterns**

These symptoms, which push inhabitants of drylands' watersheds to take refuge in river basins, are part of structural processes such as linkages of rural economies to national urban and world markets. Leo de Haan and Paul Q. van Ufford (2002a:243), along with Cour and Snrech, note that population growth, natural environment changes, and brutal exposure to world markets caused a rapid increase in interactions between rural and urban areas. These three driving forces not only altered production and the flows of goods, services, and finance between urban and rural areas, but also brought about a significant increase in people's mobility, where the constraint of physical distance between urban and rural areas is decreasing and migration from the countryside to the towns is increasing rapidly (De Haan and Van Ufford 2002b:2). However, in our understanding, these interactions are founded on unequal flows between the two domains, with the urban sector predominantly in the position of the initiator, while the rural sector is made to respond more quickly to demands of urban areas. Leo de Haan and van Ufford (2002a:243) note,

Urban markets influence rural settlement patterns and agricultural production, in the sense that rural population densities have increased along the same geographical lines

as urban markets have developed. However, while rural areas now quickly respond to urban demand for food, the flow of urban goods and services to rural areas generally lags behind.

The slow response of urban areas to rural demands may cause significant harm, especially if it is replicated by exploitative government policies such as reducing food prices, as De Haan (2000:16) notes, 'to privilege their urban rank and file at the cost of the farmers'. In cases where urban areas, being the seats of power and decision-making, enforce such policies and fail to deliver emergency relief and security services to rural areas when needed, the latter may undergo mass population mobility. It is worth noting that the structurally induced scarcity is what generates mobility, though not necessarily in drylands and not necessarily caused by droughts. In South Africa a coincidence of demand-induced scarcity in the former Bantustans and supply-induced scarcity as the result of soil erosion, water depletion, and fuel wood depletion reduced rural incomes and helped push many black South Africans to urban slums (Turton 2000:117). This generates water scarcity in urban areas, especially if the social resource scarcity is severe in the country. This has its impact on the water partition, especially since urban areas are typically located downstream.

#### *2.4.4 Hydrosolidarity: Everyone lives downstream, everyone owns the river*

Issues of entitlement to water, or at least to some uses of water, have become increasingly contentious, though rather complicated. 'It is not easy to say who owns water' (Wouters 1999:79). This is associated with the nature of water sources, existing uses, and certainly, power relations. Powerful actors assert their positions and make their voices heard in the realm of the legal debate, while the voiceless are yet to be heard or become visible. Posing the question of 'who owns the rain over a river basin, and according to what rules should it be shared', Falkenmark (1997:39) notes, 'this is a much wider issue than the more limited one which currently dominates the legal debate: how to equitably share the water running down a river'. A number of other questions have also been asked as to whether the upstream user should be permitted to develop, unilaterally, the waters flowing in a shared river; whether the downstream user sustain existing uses founded on its earlier appropriation of a river's waters; what level of pollution or other possible adverse impacts is considered acceptable and what sort of protection needed to be provided for ecosystem (Wouters 1999:79). These questions reflect positions of diverse stakeholders. 'The theme "everyone lives downstream"', according to Wouters (1999:79), 'emphasizes these issues and highlights the potential for conflicts over scarce water resources.' As such, these issues necessitate a new vision, necessarily one that addresses the complementarity of the interests of different stakeholders (see McCully 1996).

Albert E. Utton (1982:117), Sandra Postel and J.A. Peterson (1996), and Aaron Wolf (1995:94) suggest that changing circumstances and emerging conditions

should find reasonable responses in treaty-making. Climatic changes and sudden increases of populations in an area might be examples of such emerging conditions. The most significant effect of climatic change is that it makes the previous legal regulations shaky and must be taken into consideration in future water-sharing agreements (see Postel and Peterson 1996:48). Changes in population distributions that disturb the existing “models” are basically attributed to the waves of immigrants and refugees who affect distribution and usage of water (Wolf 1995:95, see Donkers 1997:136).

Population concentration binds together the power and spatial dimensions of water use. Dynamics on the ground manifest in population concentration call for a paradigm shift, as advocated above, in at least two respects. The first is that population movements threaten extralegal changes of political regimes and the resource ownership/management patterns they guard. The second is their direct impact of generating both supply-side and demand-side water scarcity. The demand-side water scarcity caused by population concentration represents the third aspect of loss caused by disruption of the water partition, the discussion of which we deferred to this section.

Biswas (2000:3) sees water availability in urban areas of developing countries as ‘generally not a serious problem as long as the population numbers were low and the concentrations of population were not high’. In other words, when populations concentrate, problems of scarcity are likely to emerge. This, in our view, is not only due to the simple fact that urban dwellers consume for domestic use more water than rural dwellers, but more importantly urban residents are associated with use of more “blue water” for large-scale agriculture to cater for their food needs and other urban amenities, where these themselves were the causes of further population concentration downstream.

People flow with the water, naturally from upstream to downstream. ‘About two-thirds of the world’s population live in coastal, i.e. *downstream*, areas and this proportion is *likely to increase rather than to decrease*’ (Falkenmark and Lundqvist 1999:129, Rockstrom 1999:12-3, italics added). Failure to reduce rural vulnerabilities results in mass migration from upstream watersheds to downstream urban areas and, therefore, creates water scarcity therein. Success in reducing urban water management problems in the future, according to Rockstrom (1999:12), ‘will depend on the capacity of reducing the vulnerabilities (and thereby migration flows) among rural communities, generally living in upstream watersheds’. The major cause of stark rural vulnerabilities is the collapse of their livelihood systems manifest in the declining productivity of their lands and sometimes the total failure of their harvests (see Rockstrom 1999:13).

The concept “population concentration” in most of the literature is used in connection with urbanisation, where the latter denotes ‘a traditional pattern of rising population concentration in which larger centers grow at a faster rate than smaller ones and thereby increase their share of population’ (Champion 1998:70, Boahen 1990:206, Prakash 1983:189). In this respect, population concentration can be re-

garded as a deviance from what was considered (at a certain point in time) the normal dynamics of “population distribution”. The latter, different from “population density”, ‘refers to the spatial pattern in which the population find its location such as linear, dispersed, nucleated agglomerated, etc.’ (Chandna 1999: 44). The concept of population concentration is also used by authors such as Boahen (1990:206) to refer to groupings of population in relation to industries such as that of workers on mining fields. Population concentration can also be seen as a process that takes place in a larger regional scale in relation to the Earth’s total area, such as coastal or downstream areas, as noted above (for details see Chandna 1999). Population concentration is measured by population density, where the latter refers to the ratio of population size to a given land area and expresses how the population of a country is spatially distributed (FAO 2002b, Chandna 1999:44). Population density ‘illustrates the link between population and resource distribution at different levels of analysis’ (FAO 2002b). Population density, according to Chandna (1999:46), ‘is a measure of the incidence of population concentration’.

Urbanisation, as an expression of population concentration, has a special impact on water availability, especially on arid lands, where the most densely populated parts are cities, as mentioned earlier. Urbanisation has an accelerating effect that makes water ever-more demanded. Concentrated population growth, according to Saeijs and Van Berkel (1997:13), ‘will exert tremendous pressure on the quality of available reserves of fresh water and will lead to over-exploitation. Moreover, the necessary economic growth in developing countries and the lack of financial resources in these countries lead one to fear that purification of waste water will be a low priority.’

Water scarcity is seen as inherent to the complex interplay between urban and rural populace, as Falkenmark and Lindh (1993:90) argue, where ‘its most salient characteristic is the movement of people from rural areas to urban areas, movement that creates water scarcity and leads to over-urbanization’. This interplay has a “green water” component, essentially where subsistence economies collapse due to increased eroding surface runoff, meaning less infiltration and soil moisture on farms contrasted with a perceived abundance of “blue water” in recipient regions. Resource capture results in groups of population being pushed to marginal lands, therefore, contributing to the erosion of these lands, and finally to the loss of their rainwater and again migration of populations to downstream urban areas, as mentioned above.

Shortage of “green water”, which can be seen in the generalised form of impact of droughts and land degradation, has recently shown some significant impacts, notably associated with the so-called environmental refugees who often target large downstream urban areas and cluster in their surroundings (for details see Rockstrom 1999:12).

Resource capture, as a cause of ecological marginalisation, would in the final analysis mean an enormous number of food consumers crowding into towns, which implies large-scale agriculture is needed for producing grains and other ne-

cessities of urban populations. In arid regions, where disturbance of the water partition might become grave and where rainfall is erratic, catering for secure food production necessitates irrigation.

### *Reproduction of water scarcity*

Population concentration, as one author would argue, means large concentrations of pollutants, the net result of which is 'that waters in many rivers cannot be used for as wide a range of uses as was possible in the early part of the twentieth century' (Beaumont 2001:11). Pollution thus reduces the usable amount of water (Falkenmark 1997:21, Kiss 1997:60, Betlem 1997:212).

The fact that some 90 per cent of all wastewater in developing countries is currently returned untreated to river systems is called "hydrocide" by Jan Lundqvist (Turton 2000:115). The significance of the state of affairs leading to hydrocide, according to Turton (2000:115), 'is that developing countries with vibrant economic growth and a strong modernisation development policy, are caught in a serious dilemma. Strong and sustained economic growth is ecologically unsustainable, yet following environmentally friendly policies could result in political suicide and major economic hardship.' Turton (2000:115), along with Ohlsson and Lundqvist, distinguishes three ramifications of hydrocide. First is the effect of increased levels of water pollution on morbidity and mortality in developing countries. Second is the loss of aquatic ecosystems and the resultant biomass production capacity, which heavily impacts developing countries, particularly marginalised areas in these countries. Finally is the increased cost of importation of uncontaminated water over longer distances accompanied by increasing need to treat contaminated water. Turton (2000:115), continuing his reference to hydrocide, states, 'What the hydrocide concept shows, is that water scarcity should not only be thought of in terms of volumes of water, but also in terms of the quality of water, with the latter arguably being a bigger threat to society as the result of a direct threat to ecological functioning' (see Rockstrom 1999:13).

Urban growth consequently is ultimately self-limiting' (Falkenmark and Lindh 1993:86-7). In addition to its being one important reason for increasing water scarcity, as according to Falkenmark and Lindh (1993:90), population growth 'in the long run, may create volatile social situations'. This is reflected in the rapidly rising costs, the increasing difficulty of finding sources of finance, and the massive opposition to water storage projects due to their side effects (Falkenmark 1997:22). Thus, in addition to its contribution to pollution, population concentration may cause, in combination with other factors, reduced river flow. 'Population concentration, land degradation, deforestation, industrial and agricultural [pollution], all affect rainfall and the productivity of the rivers and their basins' (AUF 2004).

The influence of domestic consumption is boosted by urbanisation and the power positions that characterise the urban/rural divide, where policies tend to be biased towards the former either because of the organised pressure it exerts, or be-

cause it makes up for the power bloc. Cities can capture water from a far distance, affecting local users and ecosystems at the source. Turton (2000:120), along with Reisner, cites Los Angeles as a city progressively capturing water from as far afield as the Colorado River and with plans to make rivers flow backwards so that water from as far away as Canada and Alaska can be appropriated. Cities are, in fact, getting more power and increasingly piling a larger proportion of the national vote for serving their interests (for details see Postel and Peterson 1996:22).

Given such dynamics, the assumed reciprocity between river basins and drylands becomes tricky when groups in the latter undergo severe pressures and move *en masse* towards riverbanks. 'The victims of drought and famine who seek refuge in the river basins are often confronted by well established oldtimers and long standing property rights which in many cases exclude others' (Mohamed Salih 1992:13, Darkoh 1992:3-4). The RZ, therefore, becomes a space for political bidding, where "agonised newcomers" will likely be sought by factions of "competing old-timers" to take sides, while other old-timers would like to see the newcomers evicted altogether. Turton (2000:117) points out that local authorities in urban areas under Apartheid were collaborators of the regime and, thus, were largely unresponsive to the needs of the expanding community of the ecologically marginalised black South Africans, hence, causing societal polarisation and weakening the state's institutional base. The presence of the "agonised newcomers" represents a direct threat to some of the old-timers, especially those keen to preserve the status quo. It also represents an opportunity to rivals of the latter. 'Recent calls for land reform by the progressive elites have been shunned by the wealthy and powerful or those whose political and economic interests are incompatible with those of the rural poor' (Mohamed Salih 1992:14, see also Darkoh 1992:4). The political potential of environmental scarcity, which is manifest in population movements, 'creates an arena for competing interests between economic, social, and political entities which means that various systems of land use are representations of the interests of real population' (Mohamed Salih 1992:14, see also Darkoh 1992:4).

Thus, the relationship "NRZ population-sending"/"RZ recipient" regions becomes a conflicting relationship, which necessitates redefining accessibility or entitlement to spatially inhabiting and economically benefiting from resources in RZ areas. In the latter areas the need for solidarity turns into a polarisation between the immigrants/IDPs and the host communities, among immigrants/IDPs themselves, and in relation to polarised competing factions in recipient areas. In the case of South Africa, Homer-Dixon (1998:211) notes that 'scarcity-driven migrations into urban areas and the resulting conflicts over urban environmental resources (such as land and water) encourage communities to segment along lines of ethnicity or residential status. This segmentation shreds networks of trust and debilitates local institutions' (see also Richards 2002:8).

For some urban groups or actors this situation provides an opportune atmosphere for changing the course of things in their favour or striking deals that would not have been possible under normal circumstances. In South Africa, according to

Homer-Dixon (1998:211), powerful warlords linked to the Inkatha Freedom Party and the African National Congress took advantage of the dislocations in urban areas to manipulate group divisions within communities, often resulting in violence and further institutional breakdown.

Group division then became the basis of politics in South Africa. Environmental scarcity increased the salience of group boundaries, allowing warlords to gain control, further fragmenting society. Inkatha came to dominate informal settlements during the early transition to democracy, by striking political deals with warlords and manipulating conservative group identities evident in recently mobile migrant communities (Turton 2000:117).

The situation described above becomes highly politicised because the urban arena now becomes a configuration of the resistance or unwillingness of existing institutions of structural inequality to change, counteracted by the pressure of environmental scarcity on the groups now pouring into urban areas. 'Environmental scarcity threatens the delicate give-and-take relationship between state and society, with violence being a manifestation of troubled relations between these two main components' (Turton 2000:117). Relations between the state and society become increasingly redefined through marginalised groups' awareness that state policies, namely the capturing of their resources, contributed to their plight. They often become part of an organised opposition against the state and their resistance to state oppression not only expresses their discontent, but also represents their struggle to gain access to power, which they can use to rid themselves of authoritarian development (Mohamed Salih 2001:49).

The usefulness of the concept of environmental scarcity resides in the nature of the conflicts that environmental scarcity spurs and their final outcome. Conclusions of major research projects show that environmental scarcity contribute significantly to social instability (for details see Turton 2000:117), especially in connection with "authoritarian development". The latter 'reinforces ethnicity, breeds insurgency, and contributes to rebellion since this is the only institutional mechanism for collective action vis-à-vis the state' (Mohamed Salih 2001:17). Especially in urban areas, the victims of environmental scarcity tend to reorganise themselves vis-à-vis the state's institutions, where 'livelihood struggles in the more ethnically heterogeneous urban centres involve both ethnic and multi-ethnic community-based associations' (Mohamed Salih 2001:50). Environmental scarcity, in this manner, causes a collision between the locality/periphery and the core. In the words of Mohamed Salih (2001:50), 'rural-urban migration (in search of employment and seeking alternative means of livelihood) produced some unprecedented social and political dynamics. Immigrants often organised themselves in self-help, community-based organisations and practised rural values in order to support each other through difficult times'.

Population movements thus shake existing balances of powers and invite political and ideological contention, rather than being confined to economic demands. 'River basins are the arena where such conflicts can transcend ecological consider-

ations to trigger into major social and political disasters' (Darkoh 1992:4). Thus, while beneficiaries from authoritarian development would strive to maintain their previous gains or even to capture additional resources, the losers would strive to change the old resource distribution regime. The losers, who are often marginalised *ethnic* groups, now contest through both militant action and new forms of organisation, namely those denied to them by the developmentalist state. 'In the face of the appropriation of local community land under authoritarian development, ethnic affiliations become a major institutional framework for protecting common interests and channelling resentment against poverty-inducing development policies' (Mohamed Salih 2001:54-5). Groups' dislocation, or their mass flight to urban areas on river banks, especially when they move as a complete village or community, bring with them the same resentment that was fermenting during their resistance to resource capture. State-backed groups and beneficiaries (often urban middle class) then meet, at the margin of their urban niche, with politically conscious marginalised groups.

## 2.5 Conclusion

To establish whether water scarcity does exist or is likely to happen and whether it may cause conflict or even a "water war" we need to consider a multitude of factors, including, besides the demographic, political, socio-economic, environmental, and the degree of human resource development in a society. Clearly, the historical evolution of societies in the downstream of a river basin is different from that upstream. This evolution may generate a regime of control that defines power relations between this part of the basin and the upstream part. Depending on circumstances, the downstream part of the river may become the seat of power, the core which monopolises for itself political and economic powers, and it may accumulate more power by using its potential to allow for easier farming. In such a process it may establish a stark structural inequality between its own domain and the surrounding drylands and wetlands. It may capture resources from these surroundings and cause the ecological marginalisation of their inhabitants, ultimately leading to their mass migration and displacement to places of concentrated economic development, i.e. the prosperous RZ. Water scarcity, in this respect, would be largely attributable to socio-political processes of resource allocation, of enacting regulations and implementing policies of use of such resources, often influenced by dynamics at the river basin level as well as at the level of the surrounding watersheds, both regional and international. Thus, investigating water scarcity implies seeing the river in such contexts instead of making it an isolated unit of analysis, even when this is viewed through advocating an integrated river basin approach. Domestic hydropolitics does matter, and understanding it is perhaps the greatest asset for understanding the international hydropolitics of a river basin. Essential to understanding the domestic level is, yet again, understanding the power inequality between the RZ and its surroundings at the national level.

The evolution of the body of knowledge on hydro politics, as discussed in this chapter, places a river basin in its regional and global context. It furthermore brings into focus issues of scale and range as central dimensions to our understanding of hydro politics, expanding our scope beyond that of water resources management, which is a mere component of the whole. Thus, the hydrological cycle is conceived of through four distinct domains – the natural, engineering, institutional, and trade domains – where each evolves and involves certain actors and interests. Thus, while actors in the engineering domain are interested in the mobilisation of the “blue water” fraction of the hydrological cycle, those in the institutional domain intervene in enforcing some allocative measures, which then define power relations with regard to the use of water. It is this domain where regimes of “water scarcity”, “water poverty”, structurally induced relative water abundance or structurally induced relative water scarcity are generated. However, like the engineering domain, the institutional domain is familiar, as it has probably always been the subject of debate in connection with “river basin” development. It involves institutions at the national level as well as at the international level. The new domain that adds illuminating analytical value is the “trade domain”, which opens the geography of a river basin to a wider range of other watersheds, either in the immediate neighbourhood or far away across the oceans. While it is primarily a domain for exchanges of goods, as an analytical tool to rethink the issue of water scarcity and water conflict it provides a key piece of the water management puzzle. It is also a tool for achieving a sustainable development. This sustainability component resides in the connection made between “virtual water” – traded in the “trade domain” – and “green water”, where the mobilisation of the former to the latter, makes the structural and essential link between the “trade domain” and the remaining fourth domain, i.e. the “natural domain”. That last, defined by the flow of water vapour, functions at the highest scale level, straddling continents and ecosystems, and thus goes beyond any river or watershed. With this appreciation of the complementarities and widening scope, we can now safely embark on the study of a RZ in relation to a NRZ.

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## 3 Carving Out the Sudan: Control of the Nile and Annexation of Non-Nilotic Watersheds

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### 3.1 Introduction

Our understanding of the current hydropolitical events in the Nile Basin cannot be isolated from the history of restructuring and reshaping the polity and economy of its co-riparians, especially if this history features the intervention of one riparian in the affairs of another and literally carves out its current boundaries. The current Republic of the Sudan was carved out as part of its northern neighbour's strategies to control the Nile. The nineteenth century saw Egypt's effective wars against Sudanese kingdoms over Nile water. These wars and the colonisation that followed reshaped Sudan's political, economic, and cultural milieu. It is no exaggeration that current dynamics in the Sudan are but persistent echoes of the incidents of the nineteenth century, the claims that followed from them, and the political coalitions and ideologies they generated.

This chapter focuses on the political and economic processes that have contributed to redesigning spatial relationships, reshaping use and accessibility to resources, and creating the embryos of environmental scarcity in the Sudan. It discusses the processes of carving out (the map of) the Sudan and branding its political system with centralisation, processes that necessarily involved the annexation of other watersheds to the Nile Valley (Chapter 1), as well as the process of creating an economic core in the central RZ. That last with regard to the economic origins of state-building help interrogate in historical perspective the role of the "hegemon" (Turks, British, and Egyptian in alliance with the Sudanese riverain elite) as well as what we shall consider in Chapter 4 concerning contemporary anti-hegemony civil wars. More precisely, the chapter discusses the processes that generated a new political alliance or power block founded on the use of Nile water. In this connection, the chapter discusses the processes that made the Nile Valley (downstream RZ) politically dominant over the NRZ/upstream RZ, maintaining increased concentration of economic development in its domain and spreading and maintaining cultural hegemony over these regions. It essentially aims at investigating the predatory nature of the state in the Sudan and how this predatory behaviour served as an instrument for controlling the Nile and other scarce resources, including labour during the nineteenth century.

The above issues sum up the two main sections of this chapter. Section 3.2 traces the political processes that led to the dissolution or undermining of traditional institutions and their autonomy, establishing a process of centralisation that was totally new to the Sudanese political setting. In this section, essentially in connection with regimes of structural inequality, it discusses the formation of the political alliance in association with use of Nile waters with, at its heart, the riverain elite. This alliance would continue to dominate national politics in the Sudan and redefine and reshape access to water and other resources. Section 3.3 focuses on the process of economic modernisation, its irrigation and export bias, and how this has been largely made to coincide with the needs of the new elite, making the central RZ the core of development.

The aim of this chapter is to reveal the impact of scalar politics by depicting the processes that led to the promotion of the central RZ and conferred it with both political and economic power. Thus, this chapter argues that the processes of political and economic modernisation, being part of a colonial condition which was largely maintained in post-colonial Sudan, reshaped the resource map and influenced population redistribution trends in the country. This essentially reshaped the relationship between the Nile Valley (i.e. the arid and semi-arid RZ or downstream RZ) with both the expanses to the west and to east of it (i.e. the NRZ) and the Nile's remote tributaries to the south (the wetter or upstream RZ). It characteristically created abundance in the downstream RZ and scarcity in the NRZ/upstream RZ.

### **3.2 From loose-knit entities to a centralised political system**

The arrival of the Turks in 1820 led to radical changes in Sudan's political system – it represented the beginning of territorial rescaling policies, primarily taking the form of centralisation and expansion of state power. These changes significantly affected the relationship of the Nile Valley to the regions surrounding it and reshaped communities' access to and ability to benefit from natural resources. However, the Nile Valley's relationship to its surroundings had been evolving, even before the advent of the Turks. Thus, it is important to shed some light on the nature of these pre-colonial political systems by looking at the degree of autonomy of their composing entities in managing their own resources.

Three institutions dominated the political history of the largest part of the Sudan, namely kingdoms, tribes, and religious sects. Interactions among these three institutions shaped the nature of political systems and generated the kinds of ideologies over which the Sudanese currently contest, basically in relation to whether the political system should be centralised.

### 3.2.1 Dynamics of the political system in the Sudan (1504-1820)

During the “millennial” regime, from about the third century, the Nile Valley in the Sudan witnessed its first dramatic transition of modern times. The ‘camel’, which ‘was introduced into Northeast Africa in Roman times’ (Spaulding 1998:47) signalled this transformation. ‘The new animal greatly facilitated life in the arid northern belt of the Sudan, including northern Kordofan and it greatly increased the power if not also the sheer numbers of the northern communities’ (Spaulding 1998:47). The Beja who inhabited the plains east of the Nile Valley (hereafter called simply the “eastern plains”) were now able to alter the existing balance of power: ‘the acquisition of these animals seems to have transformed their economy and society no less than the horse did that of the Plains Indians’ (Trigger, cited in Spaulding 1998:47). Referring to the Blemmyes of the eastern plains, Richard Holton Pierce (2001:159) states that ‘for perhaps as much as a century and a half they actually ruled a stretch of the Nile Valley in Lower Nubia’. Stock from the plains west of the Nile Valley (hereafter called the “western plains”) also acquired the power to conquer the Nile Valley. ‘The Nubian speakers of northern Kordofan benefited from this transformation, as did the Beja, they turned their impressive new power eastward into the Nile valley, where they seized the levers of state power from the old Meroitic kings [and] established their own successor realms’ (Spaulding 1998:47). While Nubia seems to have restored its dynastic rule, the impact of the camel was only a precursor to the more far-reaching impact that this animal would bring about. The second half of the seventh century witnessed the flow into the Sudan of nomadic Arab tribes, primarily camel herders, who eight centuries later, as partners in the Funj Kingdom, would become important players in the politics reshaping the midstream of the Nile.

The emergence of the Funj Sultanate (kingdom) (1504-1820), was the result of a search for resources and changes in the population distribution because of the immigration of large groups from the north and the south. The Funj Sultanate, also known by two other names, i.e. *As-Saltana Az-Zargaa* (the Black Sultanate) and Sennar Kingdom (Ibrahim 2002:20), emerged in central Sudan after two competing groups (the Funj<sup>1</sup> and the Arabs<sup>2</sup>) joined forces and brought to an end the Southern Christian Kingdom of Alwa (Aludia). By the end of the fifteenth century, the kingdom of Alwa was ‘in a state of collapse with the rise of the Hadariba state in north-east Sudan under its great leader, Abdallah Jamma (the

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1. The origins of the Funj are quite controversial. The Funj are either believed to be from a purely African Sudanese stock originating from the Shilluk or the Nilotics, or a hybrid (Afro-Arab) (Ibrahim 2002:20). Pollard (1984:168) states that ‘The Arabs, who had previously invaded southern Sudan and Ethiopia, after bypassing the Gezira, intermarried with the local population. This was the probable origin of the Funj ethnic group.’
  2. Presumably, these are descendents of nomadic Arab immigrants, who crossed from Arabia through the Sinai desert into Egypt and, through the Nile corridor, they infiltrated into the Sudan by mid-7<sup>th</sup> Century (detailed in Chapter 6).

Abdallab) who established his capital in Gerri. At the same time the Fung<sup>3</sup> were entering the Gezira from the south' (Davies and Abu Sin 1991:3). The two rising contestants fought with each other then, interestingly, struck a deal. 'In 1504 AD, the Fung led by Omaras Dunkas invaded the Gezira. After defeating the Arab Abdulla[b] tribe at Sennar, and establishing a historical ascendancy, they joined force and conquered the rest of the Gezira' (Pollard 1984:168, Davies and Abu Sin 1991:3). Maintaining their source of support, the new allied had their 'capital at Sennar and a secondary administrative centre at Gerri' (Spaulding, in Davies and Abu Sin 1991:3) in addition to headquarters of several other "tribes".

In the western plains, the demographic weight of immigrant groups was probably significant as they also contributed to changing the prevailing political order. It was aspirants to power who benefited from this weight. A Sudanese historian wrote that 'Sulayman Solongdungo', the founder of the Keira dynasty in Darfur, 'drove out the Tunjur with the help of nomadic Arab tribes' (Hassan 1977:203). Yet it is important to note here that in neither case did Arabs become the principal rulers. The first tier in the political/administrative hierarchy in both the Funj and Fur kingdoms was always occupied by an African king and his African court.

The alliance between the Funj and the Arabs established its political and administrative system based on the division of power between the Funj kings (the central government in Sennar) and the Arab tribal leaders in their tribal territories, or *dars* (see Pollard 1984:168). Described as 'a federation of principalities' (Crawford, cited in Davies and Abu Sin 1991:3), the Funj political system allowed a significant degree of autonomy. Under the sultans of the Funj, the governors of provinces were charged with the administration of the rural communities under their rule and the collection of taxes (Adam 1987:19). This pattern of rule, similarly, prevailed to the west in Darfur Sultanate, where 'the Fur Sultans left tribal groups to practice independence in their internal affairs, thus observing the time-honoured principle of non-interference in internal affairs' (Harir 1993:17). Under these political regimes, tribal entities (sub-state actors) "owned" their resources and managed them according to their traditional institutions in light of their indigenous knowledge.

With regard to resources, our argument here is that the arrangement between the centre and the *dars* of the tribes served as a check against the expansion of the state's power, i.e., it served as a "de-centring" agent to state power and necessitated continuous negotiation between the two layers. 'This flexible nature of state borders, and the possibility that groups pressed hard by the centre could opt out, provided a strong disincentive for the use of excessive military force by the "state"' (Harir 1993:17). At a later stage, an intervening apparatus as was present in the *sufi* sect (religious order), would add momentum to this "de-centring" process, while simultaneously breaking down boundaries between tribes and establishing strong symbiotic relationships among them.

Historical indicators show that the tribal ideology that was a pillar in defining the ruling alliance was starting to wane and was being replaced by a new emerg-

ing ideology, present in *sufism* (El Zain 1996a). As early as the sixteenth century, *sufi* holy men had made their way into the Sudan and by the late decades of the seventeenth century, their *tarigas* (orders) had become established (for details see Lavers 1977). 'In the early days of the Funj State (1504-1821) the religious elite was the most dominant among the sedentary population and also influenced the nomadic people' (Ahmed 1986:2). In this manner the religious elite had great influence on the politics of the Funj Kingdom. Although the Funj sultan remained the sole possessor of the land, he made land grants in various forms and sizes to the holy men of the time and exempted them from payment of all taxes and dues throughout his dominions (Adam 1987:17). In fact, land during this era was of a significant political as well as economic value. Importantly, it symbolised power (Chapter 4).

During the same timespan, religious men in Darfur, the other kingdom competing with the Funj Sultanate for dominance over the region, also acquired power positions (Abdel-Jalil and Umbadda 1986, O'Fahey 1977, Hassan 1977). Similarly, in Kordofan, the region between the two kingdoms, the consolidation of power for the dominant clan in the Hamar tribe had implied a policy of encouraging those who possess religious learning to resettle in the Hamar land (Babiker 1986:384).

Thus, *sufism* started to develop both as a religious and social form of organisation, surpassing the ideological and geographical boundaries of tribes and establishing new relationships (see Karrar 1992). Evidence of the emergence of *sufism*, replacing the tribal ideology and gradually heading towards a position of dominance, is the fact that *sufi sheikhs* (religious leaders) had started to replace tribal leaders in dealing with tribal issues (Al-Karsani 1985:19-20). Also, *sufism* had become the belief of the royal families as well as of the public in the Funj Kingdom. It was in fact rare to find people whose lives were not influenced by it (Hassan 1985:11). The vanguards of this ideology, in general, did not belong to tribes existing in the Sudan (Hassan 1985:3-4, see also Kevane and Stiansen 1998:22, Awad 1977:310).

According to this reading, *sufism* could be considered a structure of "unity in diversity". Under this ideology, the political system in central Sudan was sustained throughout the three-century reign of the Funj Kingdom. It worked more as a condition than a religion; a new temper and sphere that engaged people from all cultures and religions. During this period, Islam assimilated various aspects of cultural heritages of Pharaonic, Christian, and local African origins, which became part and parcel of the popular Islam of the majority of the Sudanese people (Ali 1991:37-8, see also Al-Mahal and Omer 1992:14, Seri Eddin 1998:293). Scholars such as Al-Gaddal (1985:5-6) and Hassan (1977:205) point to a rising tendency towards integration among northern Sudan communities in which trade was the spearhead and where Sudanese kingdoms opted for safe routes for their external trade.

It is our argument that *sufism* was the ideology that facilitated “annexing” the NRZ to the Nile Valley because it respected the diversity of social organisation inherent to this zone. *Sufism* appeared as the new expression of this tendency of reinforcing spatial relationships. In the late part of the reign of the Funj Kingdom, spatial relations and spatial accessibility became increasingly apparent, partly because of security and partly because of the drive towards political and ideological unity in northern Sudan. A nineteenth century manuscript reflects this fact more than any other later research. Wad Deifalla’s *Kitāb Attabaqāt*<sup>4</sup> is a document that set the boundaries of the world of the Sudanese *sufism* before it had been defined politically. With the exception of southern Sudan which was not yet attached to north Sudan and where almost everyone adhered to animist religions, holy religious *shaiks*, as well as poets who feature in *Kitāb Attabaqāt*, were found in almost every region of what is present day Sudan. According to this, we can argue that the political system in the Sudan had been undergoing its own internal spontaneous changes, underlying the logic of internal development and the contradiction of its own social setting. Indeed, the Sudanese political milieu, at least under the greater central authority of the Funj Kingdom, had shown a tendency towards centralisation since the eighteenth century (O’Brien and Ibrahim 1979:139).

It is worth noting here that during this era, “northern Sudan”, i.e. kingdoms from the Red Sea to Darfur, had been an inherent part of the “Sudanic belt”,<sup>5</sup> both culturally and, to a great extent, economically (for details see Lavers 1977). ‘The mystic orders known as “*Turuq Sufiya*” helped considerably to integrate the peoples of the Sudanese belt’ (Awad 1977:310). It established flexible tribal movements and strong symbiotic relationships among diverse tribes, indigenous and immigrant, which ultimately yielded or accelerated the shaping of the hybrid of the “Afro-Arab” Sudanese who are found today in and along the southern fringes of the desert and semi-desert in the Sudanic belt. *Sufi* holy men journeyed from the Sudan into the expanses of the Sudanic belt and the seventeenth century witnessed the establishment of the Sultanate of ‘Wadai or Barqu under a dynasty of Ja’aliyyin origin’ (Lavers 1977:220). The latter, being originally from the Nile Valley region, indicates the movements of groups between the two regions. Similarly, the movement of *sufi* men from West Africa into western Sudan was also significant. Religious men from West Africa taking refuge in the Sudan contributed to the wide spread of the Tijaniyya order in Darfur and pilgrims on their way to Mecca introduced the Tijaniyya order in Al-Nahud town from which it spread later to all western Kordofan (Al-Karsani 1998:183).

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4. *Kitāb Attabaqāt* is a documentation of the late 18<sup>th</sup> century-early 19<sup>th</sup> century histories of religious dignitaries by Mohamed Wad Deifalla, edited by Yosif F. Hassan (1985).

5. The Sudanic Belt refers to ‘the area between the Sahara and the Bay of Niger, the Atlantic and the Indian Oceans’ (Sudanic Africa); Homepage of Sudanic Africa Journal; available at: <http://www.hf-fak.uib.no/institutter/smi/sa/>

We examine briefly here and analyse in greater detail in Chapter 6 the combination of factors that created the notion of a westerly-lying “open frontier” and made it available for the expansion of all of the groups moving into it from the Nile Valley. With resource accessibility arrangements provided by the above regimes, movements of tribes and groups of population had been flexible and the absence of borders probably helped relieve stressed regions as tribes always moved on when their *dars*’ resources were depleted. It is likely that tribes not only migrated seasonally, but also changed their *dars* sometimes. In this sense, the creation of borders and domains of influence by the coming of colonial powers could be considered the beginning of environmental degradation in the Sudan (Chapter 4).

### **3.2.2 The centralisation process and the annexation of watersheds of the NRZ and upstream RZ**

While no adequate accounts are provided of the state of affairs in resource niches and groups of population benefiting from them during the “millennial” era, i.e. before the Turkish invasion, there is ample evidence that following the invasion, both resource and population distribution underwent significant changes (Chapters 6 and 7). The Turkish invasion signalled the second dramatic transition in the Nile Basin in modern times with the territorial rescaling, manifest in political/administrative centralisation, as its most prominent feature. The Sudan became instrumental in geopolitical designs under the “regime without a hegemon”, as in the “quasi-hegemonic regime” (Chapter 1). It is important to emphasise here that under these two regimes, the driving forces in Nile politics were largely external – the Nile had become part of Egypt’s strategy to make it an “Egyptian river”. Our argument in this research is that this colonisation, in relation to the control of (Nile) water, reshaped the face of Sudan’s history in a radical manner. Or to be more precise, it reshaped Sudan’s political system into part of a strategy to respond to Egypt’s interests which Egypt safeguarded by means of aggressive expansionism and coercion. In enforcing its own agendas, Egypt went to lengths that could have almost totally depopulated the Sudan (Chapter 6). Enforcing the trend of westward movement by Sudanese tribes from the downstream RZ, colonisation created the structural link between this zone on the one hand and the NRZ and upstream RZ on the other hand. Later, under British and post-independence rule, it rendered the NRZ and upstream RZ as the abode of “alternative sources of water” as relatively high rainfall in these zones was considered to provide the Sudan with a “major alternative to Nile water”. Exploitation of these “alternative sources of water” by the state’s expropriation of the lands where they occurred and the bestowing of them to state-backed “sub-state” actors forced the latter into collision with several other sub-state actors who historically owned these resources (Chapter 4).

The most serious consequence associated with the Turkish invasion and colonisation was that northern Sudan became increasingly detached from its “geo-cultural” milieu of the Sudanic belt (the east-west Sudanic belt axis, including Abyssinia), and was annexed to the north-south axis of the Nile Valley. The geopolitical necessity of controlling this axis would add southern Sudan to the expanded territory and both would become part of the Khedive empire. This had serious cultural, political, and economic implications. From this point in time onwards, the Sudan became culturally alienated from the cultural milieu of the Sudanic belt by its espousal of Arabist inclinations and increasing manipulations to mould it into the confines of the Nile Valley’s axis, forcing it to flow politically and economically towards the Mediterranean. It has become the “strategic depth” of Egypt. Therefore, “strategic depth” came to be defined in a situation in which any political movement that could disturb Egypt’s preferred status quo invited external intervention by Egypt or any power deemed to have interests in Egypt (for more relevant details see Warburg 2000:76, see also Zewde 1991:83, Waterbury 2002:9). More importantly, the claims of “strategic depth” appeared in tandem with the narrow interests of an elite group which had started to flourish in close association with the Turkish establishment in the Sudan. This group maintained its position under British rule and later monopolised state power in post-independence Sudan.

Turkish colonisation not only marked the beginning of the large-scale plunder of natural resources such as ivory, gold, and timber, it also signified the start of the large-scale capture of human beings for trafficking overseas (Goldsmith *et al.* 2002:189). Moreover, the Turks effected significant changes with lasting impact on the Sudanese polity, especially with regard to accessibility to resources. These included (i) strict administrative centralisation, (ii) large-scale political suppression and establishment of a regime of terror, (iii) economic exploitation, and (iv) the planting of cultural superiority and the germs of political Islam.<sup>6</sup> These transformations affected groups’ accessibility to resources, transformed the balance of power in favour of some groups, and sharpened competition between communities of the northern *arid* ecological zones and those of the *wetter* southern ecological zones.

While the form of centralisation in the Sudan which had taken place before the invasion can be considered the outcome of indigenous development, it was Turkish rule to which the introduction of political and economic modernisation in its European guise, including modern forms of centralisation, can be attributed. The Turkish invasion, in this sense, marked the beginning of modern Sudanese history (Mohamed Salih 1999:56, Ibrahim and Ogot 1990:372) and the founding of the nucleus of what is now the Republic of the Sudan (Ibrahim and Ogot 1990:372, Goldsmith *et al.* 2002:189). According to Mohamed (Salih 1999:56),

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6. In the view of Goldsmith *et al.* (2002:189), ‘Though the search for resources remained a major motivation, the dynamics of these invasions evolved to incorporate religious and cultural dimensions.’

This implies making a link between the advent of 'modernity' and Sudan's occupation by the Turco-Egyptian rule in 1821: it is in any case true that the Turco-Egyptian colonial state interfered in the affairs of the local population through the introduction of new administrative structures and the introduction of modern economic measures such as taxes and export crops (see also Warburg 1992:2, Holt and Daly 1979).

In relation to what we pointed out above, and although the Sudan's resources and population redistribution trends have been continuously in the making, it is the modernisation process that seems to have caused the most abrupt change with regard to the resources upon which its population depends.

The centralisation process had an unequal (political) impact on different regions – stabilising one region (RZ) and destabilising other regions, namely the NRZ and the upstream RZ by the waging of continuous wars. The process of centralisation under the Turks took more than four decades to complete. Thus, while control of the downstream (northern and central Sudan) was completed in 1841 by the conquest of Al-Taka, the other regions, namely Darfur, Equatoria, Bahr el-Ghazal, and the Red Sea coast, were incorporated only later in the 1870s during the reign of Khedive Isma'il. In southern Sudan in particular, this can be partially attributed to the natural barrier of the *Sudd*, and partially to the resentment that the Turkish regime created by their enslavement of the natives who heroically resisted the invading slavers (Ibrahim and Ogot 1990, see Galatoli 1950). Another important factor which curbed the advance of the Turks, was the resistance of the lords of slave trade, who engaged in the lucrative industry after the Turks boosted its market. 'The Turkish advance in Bahr el-Ghazal had come up against the greatest of the region's slave traders, al-Zubayr Rahama Mansour, a northern Sudanese who had built for himself a vast trading empire there. He defeated a government expedition and killed its leader in 1872' (Ibrahim and Ogot 1990:371). Despite universal condemnation of slavery at the time, the Khedive of Egypt had a deal with the slaver Zubayr. 'Confronted with this fait accompli, Khedive Isma'il officially recognized Zubayr as the governor of Bahr el-Ghazal' (Ibrahim and Ogot 1990:371). At this stage, the previous obstacles for advancing southward into the equatorial Nile and Bahr al-Ghazal, namely the obstinate resistance of the southerners and the immense barrier of the *Sudd*, had been overcome by both Turkish colonisers and their Sudanese collaborators, basically because the Turks now had firearms and steamers (Ibrahim and Ogot 1990:373).

The interests of the Turks and northern Sudanese, who became demographically weightier in the upstream RZ (Chapter 6), seem to have coincided. Noteworthy here is the fact that it was Zubayr who would annex the Darfur Sultanate to the Turkish domain. While the Khedive's 'primary concern was with the Nile Basin and lands to east towards the Red Sea' (Davies and Abu Sin 1991:4, see also Moorhead 1972:220), 'the adventurous Zubayr looked beyond the frontiers of Bahr al-Ghazal to Darfur, an untapped source of slaves' (Ibrahim and Ogot 1990:371). In cooperation with the colonial administration, Zubayr invaded

Darfur, killed its sultan, and annexed it to the Turkish dominion in 1874 (Wikipedia 2006). Thus, the Turkish invasion was the starting point for the annexation of remote watersheds to the Nile Valley. This was also the beginning of a new and strictly centralised political system in Sudan. ‘Its machinery was oppressive, corrupt and incompetent and the Turkish administrators were of low quality, but in contrast to the previous types of government to which the country was accustomed, it was highly centralized’ (Ibrahim and Ogot 1990:373). Described as the ‘worst of colonizers’ who ‘explored merely to destroy’ and that every governor-general of them ‘was judged by the success of his slave-raids and military expeditions’ (Moorhead 1972:219), the Turks represented a regime of terror *par excellence* and centralisation was imposed on Sudanese accordingly. Sub-statal forces’ resistance to this rule was crushed vehemently and this in itself defined the fortunes of certain groups in contrast to others, especially those who collaborated with the regime.

Of all the “sub-state” entities that suffered under the sabotage and destruction of the invading Turks, the Shilluk Kingdom in the upstream RZ came off the worst. The Shilluk were enslaved and decimated not because they were “pagans” or “Africans”; rather, because they were the subjects of the closest-standing kingdom. Straddling the central sector of the White Nile, their kingdom represented a real threat to the Turk’s strategy of total control of the river and, therefore, needed to be crushed. Other Sudanese kingdoms were either crushed during the swift southward advance or during the horrendous *Defterdar* Avenge Campaigns (Chapter 6), or were terrorised into making offers of diplomacy to avoid total destruction. Diplomacy, as experience would show, never brought peace to Sudanese sub-state entities. Mek Nimir, the king of the Ja’aliyyin who sought deals with the invading army, was humiliated afterwards and ended up assassinating Ismail Pasha, leader of the invading troops, son of Mohamed Ali (for details see Ibrahim and Ogot 1990: 362, Moorhead 1972:217).

Capable of chasing the Turks back to the fringes of the desert – to Khartoum, which became their capital, their new “fortress” (El Zain 2006a, 2006c) – the Shilluk warriors were successful in the first two decades. They then became the strategic enemy in the face of the empire builders. The Shilluk Kingdom was destroyed by both direct military campaigns and sabotage. The latter entailed close collaboration between the new colonial administration and the new class of merchants who were capable of penetrating deep into Shillukland. This served another strategic end: the depopulation of the region in upstream RZ that might have used water for irrigation. We concur that it was not enslavement as such that drove the Turkish invasion, but the strategic goal of causing instability amongst or the total destruction of Sudanese communities living on the banks of the river and irrigating their farms from its waters. Whether it was all down to the invaders, the area was effectively depopulated and this most probably delayed Sudan’s engagement in irrigation for more than a century as we shall elaborate in Chapter 6. The driving force for Egypt to control the Nile was connected to its needs coupled with the risks of decline in water discharge, which may have been behind

Mohamed Ali's modernisation efforts in Egypt and his invasion of the Sudan. During late Ottoman times, Waterbury (1979:21) notes that Egypt witnessed a long-term decline in water discharge. This, to our understanding, may have provided the incentive to engineer nature and prohibit the use of water upstream. However, we should emphasise here that the decades before the invasion, according to Al-Gaddal (1986), along with Tignor and Collins, saw a tendency among farmers to cultivate along the Nile banks and nomads to settle in agricultural communities and an increasing crop exchange.

If the plan of expanding southward was consciously driven by a decline in Nile water discharge then Turkish rule was a deliberate attempt to depopulate the part of the Sudan that had started to compete with Egypt over the Nile waters in the early nineteenth century. Mohamed Ali (the viceroy of Egypt) had two simultaneous strategies for saving water; one was controlling it downstream through the deepening of canals and the raising of the river level (Waterbury 1979:33) and the other was decreasing its consumption upstream. The latter contributed to "nomadising" large groups of Sudanese (see Pollard 1984:169), an outcome of inflicting hazards that was repeated due to erratic rainfall, as we shall see, more than a century later in the 1980s (Chapter 6).

The centralisation process drew the borders of the Sudan by cruel measures. Thus, on the eve of the Mahdia, the Sudan formed an immense block of territory extending from the second cataract in the north to the equatorial lakes in the south and from the Red Sea in the east to Darfur in the west (Ibrahim and Ogot 1990:372). It is important to note that the centralisation introduced by the Turks somehow continued throughout the last 18 decades and always involved coercion and the creation of an implicit or explicit political alliance or power block that consolidated the political system and made this coercion effective. However, throughout these 18 decades in the three power regimes of control in the Nile Basin (Chapter 1) the maintenance of centralisation and issues related to state control of resources proved a difficult task. The rescaling regulations connected to centralisation generated resentment and engaged sub-statal actors (communities) with the state in endless resistance, which largely reshaped the state's capabilities, making it increasingly authoritarian and contributing to the continuous depletion of communities' physical and social resources (Chapter 4).

The disturbance caused by the Turks in the forms of both resistance to them and the insecurity generated by the feverish engagement in slave hunting provided more reasons for the quest for decentralisation after the Sudanese rid themselves from the cruel Turkish rule by the Mahdist revolution. However, contrary to what we might think, centralisation, during the reign of Mahdism (1885-98), was no less than it had been under Turkish rule. According to Kevane and Stiansen (1998:24-5), 'the new Islamic state was built on the foundation laid by the defeated Egyptian administration'. A national law binding everyone, irrespective of their tribal affiliations replaced the customary law of individual tribes and many of the earlier distinct ethnic elements were assimilated into a northern Sudanese nation which was

united by a common language, territory, and culture (Adam 1987:20, see Kevane and Stiansen 1998:25). ‘The extensive mobility experienced during the migration and troops movements no doubt helped to break open the narrow horizons of local cultures’ (Beck 1998:263). This situation continued throughout the reign of the Khalifa<sup>7</sup>. His appointed administrators adopted the role formerly played by leading nomadic families (Ahmed 1986:3). Thus, different regions were directly connected to the capital Omdurman, which was seated on the downstream RZ and hardly any room was left for exercising even local influence. The repressive state machinery expressed itself in *jihad* as well as punitive expeditions, the most aggressive ones being to Bahr El-Ghazal and the Nuba Mountains (see Goldsmith et al. 2002).

By the end of the nineteenth century/beginning of the twentieth century, centralisation under the Condominium rule (1898-1955) had gained momentum and its effect on the resource map and population distribution were enormous. The Condominium, under which the British were the supreme and the Egyptian the petty-colonizers of Sudan, can be considered an extension of the Turkish colonisation; in fact, both British and Sudanese consider it to be so.<sup>8</sup> With the coming of the British, the regulations set by the Turks became more rigorous.

However, two major departures from the Turkish era need to be pointed out. One was that while throughout their rule the Turks created havoc in northern Sudan and effectively depopulated it, the British, following the second decade of their invasion of Sudan, adopted policies that allowed for the repopulation of the region. Connected to this was a significant change – the implementation of the philosophy of “indirect rule” and the territorial division of the Sudan into units of “native administration”. We shall return to this later. The other departure, actually a violation of the justification for the invasion of the Sudan (i.e. its being an Egyptian property), was the disconnecting of what had been called “closed districts” from the Egyptian “empire”. The areas included in the “closed districts” were southern Sudan, Nuba, and Fur in the west and Ingessena in southern Blue Nile Province (Majak 2000:40, Suliman 2000:166). Soon after its pacification, southern Sudan was attached to Britain’s East Africa colonies and remained administratively so until 1947 when the outcome of the Juba Conference attached it once more to northern Sudan.

Administratively, post-independence rule swung between maintaining the British traditions of indirect rule and native administration (1956-71) – save for a short period following the 1964 October Uprising, which abolished this system – and granting “autonomy” to localities and regions from 1971 to 1991. “Federalism” has been the practise from 1991 onwards. However, these arrangements have been

7. *Khalifah* (caliph), literally means inheritor. Reference here to Khalifa Abdullahi who inherited the position of head of state after the death of the Mahdi.

8. The British and the Egyptians refer to this invasion as the “re-conquest” of the Sudan (see Moorhead 1960: 332, see Gibbons 1918). In the view of the ordinary Sudanese both Turkish and British forms of colonisation were referred to as *At-Turkiyya* (Turkish rule); they distinguish the former as *At-Turkiyya As-Sabga* (former Turkish rule).

largely affected by the nature of the political regime, where the relationship between the regions and the centre was stamped with an authoritarian nature for most of the time and a clear *retour* to *Turkiyya* in the period from 1983 until now.

The British technique of delegating power to collaborative tribal leaders and allying with sectarian ones was maintained by the post-independence state. The territorial designs of land ownership, tribal *dars* and a policy of isolating certain regions continued until 1971 when some changes were introduced, which, at least theoretically, advocated popular participation and local governments. However, despite a persistent re-division of regions and provinces accompanied with the claims of granting local and regional autonomy, the post-independence political system remained largely centralised. Even the current National Islamic Front regime, with all its claims of achieving federalism, remains ‘conventionally centralist, with ultimate power vested in the relatively small coterie of military and security officers attached to the NIF’ (De Waal 2000:41). In fact, what best reflects the centrist tendencies in the Sudan is the shift from democratic to authoritarian and from authoritarian to the autocratic state, wherein the state embodies the absolute truth about every aspect of life.

### 3.2.3 The building of the power bloc and paving the way for structural inequality

As in any political system the regimes ruling over Sudan opted to build political alliances or power blocs. Together with the centralised system, this process meant an increasing erosion of indigenous institutions and the incorporation of the local notables into the centralised state machinery. Thus, being part and parcel of the process of centralisation, the building of the power bloc resulted in the widespread disruption of traditional institutions.

The necessity to establish control meant that the Sudanese kingdoms were either dismantled or reduced to the position of being mere “tribes”. The Funj king, upon recognising the rule of the invaders was maintained as sheikh of Sennar (Nasr 1979:31), probably as head of his immediate kin followers. The Sudanese traditional institutions of “tribe” and “*sufi* sect” were radically transformed and used principally for the maintenance of the new system. Though the tendency to centralise had emerged before the coming of the Turks, the “tribe” and the “*sufi* sect” did not witness drastic deformation similar to what they had witnessed under the Turkish rule. The pre-Turkish centralisation process abolished neither the “traditional” structures nor the position of the *sheikhs* (tribal and *sufi* sect leaders) as the leaders of society (O’Brien and Ibrahim 1979).

Thus, instead of an “original” flexible organisation of a core group, making the “power centre” to which followers were voluntary attracted, a more stable power centre started to emerge to which attachment of followers became involuntary (O’Brien and Ibrahim 1979:139).

Similar to the tribal leaders, the *sufi* sheikhs underwent the effects of involvement in the project of centralisation. The expanding centrism had terminated the autonomy of the *sufi* sects and coerced them into adopting some sort of centrism as required for the efficient administration of the colonial regime (Karrar, 1992:75-6).

Resource accessibility during this period changed greatly. Some traditional leaders (*sufi* and tribal sheikhs) benefited from the Turkish policy of conferring land titles upon notables. This policy ‘almost led to the creation in the Sudan of a landed aristocracy similar to the feudalist classes which emerged in many of the Arab countries which were ruled by the Ottomans’ (Awad 1987:40). This, as we shall see later, necessitated what Awad (1987) considers a “land reform” that was initiated with the coming of the British.

With regard to accessibility to resources and, later, to political power, the Turkish era was decisive in reshaping the balance of power among different Sudanese sub-state entities. During Turkish rule, besides the traditional leaders, there emerged a middle class, manifest largely in the *jellaba* (traders), which would engage in the new political alliance thanks to benefits from trade and slave labour.

The *jellaba* allied with the Turks and the British between 1820 and 1955 and since independence have dominated the political scene and effected political and economic designs with as a result significant changes in the physical, socio-economic, political, and cultural landscape. The *jellaba* group serves as an explaining factor in the dynamics of the political alliances and in this respect, it saves us from the rather erroneous generalisations that attempt to interpret the history of Sudan in purely cultural terms by portraying it as, primarily, a conflict between the Arab and Africans camps. These generalisations are not only problematic because those claiming to be Arabs hardly fit into such a category/identity, but significantly because they disguise the heterogeneity of the components of this so-called Arab camp. Moreover, the *jellaba* is a hybrid of various races. According to Suliman (2000:117), the *jellaba* is mixture of different ethnic groups including immigrant groups such as the Syrians, Memlukes, Greeks, and Turks. Today, the *jellaba* represents the social network for interaction between the most influential Sudanese Arab groups regardless of their regional or ethnic origins (Suliman 2000:117, see also Warburg 1992). However, undeniably this hybrid resorted increasingly to what it helped establish – a hegemonic culture present in Arabism and Islamism. In this regard, it is important to emphasise that the *jellaba* evolved as the thread which binds together the historical epochs, in the “old hydropolitical regime” of the Nile.

The logic of excluding/including certain ethnic groups during the Turkish era had to develop to one of racial inclusion/exclusion. Though the Turks could enslave Muslims,<sup>9</sup> they spared nearly all of the Sudanese Muslims (El Zain 2006c), so as to incorporate them into the new power bloc that was in the making. Being Muslim (in

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9. The era of the Turkish Empire had witnessed the enslavement of Muslims from the Arab Peninsula, and even from Turkish origin beside those from India, Abyssinia, Sudan, etc. (see Nugud 1995).

most cases made to coincide with being an Arab), in this respect, became determinant in defining who was considered a potential slave and who was not (see Mohamed Salih 1990:112). The power to enslave, had by now, redefined relations among the once equal communities. People allying with the new regime not only protected themselves from enslavement by Turks, but some of them also engaged in enslaving their fellow Sudanese. It is likely that during this period, many utterly weakened tribes who had not claimed an Arab lineage in the past claimed it then in order to protect themselves from slavery. This is the period when Arabism started to acquire higher status than Islam, or when it became a quality giving an Arab Muslim higher status than a non-Arab Muslim. It is not surprising that it was during this period in time that the slave trader, Zubeir Pasha, invaded the Muslim kingdom of Darfur to expand his slave-hunting niches, indicating a significant disturbance to the balance of powers between the Nile Valley and Sudanic belt kingdoms.

The balance of power before the Turkish invasion was different. 'Up to the beginning of the Turkish rule in the Sudan in 1821, the political and economic powers of the Muslim northern Sudan states and southern Sudan peoples were comparable, if not evenly balanced' (Ibrahim and Ogot 1990:363). This balance, for instance, had enabled the Shilluk Kingdom to coexist with its neighbours until the advent of the Turks. However, Turkish rule redirected these dynamics by disturbing the power balance. Where the northern Sudanese (mainly out of fear of the cruelty of the regime) had become, implicitly, the minor members of the political alliance of an arrogant regime using firearms to conquer the other, the southerners were fighting on their own with traditional arms. The key legacy of Turkish rule in the Sudan is that it founded racial and ideological superiority, hatred, and mistrust in the region at large. The *jellaba* who previously roamed the regions as peddlers or followers of *sufi* men, by now, frequently resorted to violence, while accelerating the process of Arabisation and Islamisation in the south. Their contemptuous attitudes towards this region's inhabitants certainly nurtured the distrust and fear that dominates relations between northern and southern Sudanese today (Ibrahim and Ogot 1990:373).

Techniques of "othering" some Sudanese communities conferred "nobility" on the recruits of the new power bloc and rendered all others inferior and targets of all forms of state repression including enslavement. Such a divide became the *raison d'être* with which even the British later, despite all their declared intentions to protect the African communities from the Arabs, seemed to comply. The seeds of preserving political and economic power for the few, but more importantly cultural hegemony, were planted during the Turkish colonisation, marking the beginning of a strict regime of structural inequality.

The most important conclusion to draw about this process is that in terms of entities in the Turkish Sudan, the Nile Valley would rise as the most politically dominant and would maintain this dominance by increasing the concentration of economic development in its domain and by spreading and maintaining cultural hegemony over the other regions. It has been argued that until the beginning of the nineteenth century, the Nile Valley was forced to share political dominance

with Darfur (Beck 1998:259) and certainly southern Sudan remained out of its grip. The expansion of state power and administrative centralisation initiated by the Turks, consolidated by the British and maintained by post-independence governments, came to serve the economic interests and political and cultural hegemony of a downstream RZ-seated group of elite at the core of which was the *jellaba* merchant group. The dominance of the Nile Valley (the downstream RZ) over other regions (the NRZ and upstream RZ) established a “frontier-cast ideology”, which rendered the latter regions an “open frontier” for aggressive “resource capture” and facilitated the “ecological marginalisation” of groups in the NRZ and upstream RZ. The “frontier-cast ideology” here makes the ruling elite in Nile Valley the custodian over all of the resources of other communities in other regions. In our understanding, this represented a dramatic change for the whole region, with significant geopolitical implications, and as we shall detail in the coming chapters, it was of significant importance to the hydropolitics of the Nile as it established structural inequality and laid the foundations of water scarcity.

Throughout this long period except under the short era of Mahdism, a new power block was established and the traditional institutions of the tribe and the *sufi* sect underwent yet further degradation and distortion while the *jellaba* stagnated. There is evidence that the *jellaba* suffered great losses during Mahdism after being part of the middle class during the Turkish era. The merchants, as a segment of this class, witnessed the decline of their trade for some time and lost power over the population of their regions as well as power to influence the central administration (Ahmed 1986:3). *Sufi* sects were outlawed (Kevane and Stiansen 1998:25), their position was weakened and their spheres of influence disappeared (Ahmed 1986:3).

### 3.2.4 Alliance between the state and farming communities: Creation of the “riverain elite”

In this section we will argue that some sub-state actors, precisely the riverain Sudanese, were co-opted by the British, where the latter recognised the value of their land titles and enhanced irrigation. From this time on use of water, or provision and facilitation of its use, became an important criterion defining sub-state groups’ powers as well as their vulnerabilities. We argue here that although water supplies had been considered for the downstream RZ, as well as for the NRZ and upstream RZ, the size and purposes for which water was supplied now was greatly changed, generating stark inequalities between these zones.

The demise of Mahdism brought new winds for the traders, religious men, and tribal leaders. While the Turks did not establish good relations with Sudanese communities, for at least the first two decades after they invaded the Sudan, the British clearly tried to guarantee communities safety and even encouraged the return of those who had left. The British administration, after pacifying northern Sudan, embarked on building the political alliance which it would use to subjugate the other regions

and incorporate them into a larger system, radically changing their traditional character in the process. The new power bloc was the outcome of the process of creating the elite in the Sudan in general and the riverain elite in particular which had been a result of strict technologies of incorporation and seclusion, launching a new era in which power will be closely associated to the Nile Valley and land on its banks. Mohamed Hashim Awad (1987) elucidates what could be considered the foundation of the new (or revived) power bloc, which was clearly built on downstream RZ farming communities in contrast to the agro-pastoralist and nomadic communities in the NRZ and upstream RZ. Referring to the riverain farming communities,

Being more attached to land than the nomadic and semi-nomadic population of the western and eastern plains, they were slow to follow the Mahdi in his triumphant sweep across the country and paid dearly for it. The harsh treatment which they received at the hands of the Khalifah made them ready to welcome the reconquering armies as saviors. It was only natural, then, that the new administration should pay special attention to agriculture and the farming communities in the Sudan (Awad 1987:48).

Awad adds that the British administration was interested in a vital attribute inherent in the farming communities. 'The revitalization of the agricultural sector was the best way of increasing government revenue and reducing its dependence on Egypt's grants. At the same time, *a rehabilitated farming community would be an asset to the government, and its inherent conservatism would have a stabilizing influence on Sudanese society*' (Awad 1987:48, italics added). This was of strategic importance to the British, and the downstream RZ farming community became a critical constituency for the administration. Herbert A. Gibbons (1918:7), writing in the second decade of the invasion, states, 'The pacification of the country and the rehabilitation of its inhabitants depended upon means of transportation and the *cultivation of the land*' (italics added). More succinctly, according to Mustafa Babiker (1998:200) eight decades later, 'The wars and famines of the Mahdiyya, however, had resulted in tribal migration, abandonment of cultivation, arrogation of land rights, and a general decline in agriculture. *Immediate resumption of cultivation was considered essential both politically and economically* and was regarded by British authorities as the best guarantee for peace' (italics added). This certainly stands in stark contrast to the Turkish policy of depopulating northern Sudan. We should note also that this policy was the beginning of re-installing Sudanese society in northern Sudan by enabling the re-colonisation in the 1920s of lands that had previously been evacuated.

More manifest evidence of this cooperation between the colonial authority and farming communities is the fact that while it took less than two years to pacify the riverain communities, the colonial regime had to continue with the pacification of pastoralists and farmers in other regions for about three de-

cares.<sup>10</sup> Revolts by riverain groups, such as the historical revolt of Mek Nimir, were rare in northern Sudan in the second Turkiyya. Apart from fears of the cruelties of the Khalifa system, this was partly because the new administration had publicised its intention of adopting consensual policies. ‘The initial financial policy laid down by Lord Cromer in his address to the Sudanese chiefs at Khartoum in December, 1900, to the effect that taxes were not to be made burdensome, even if communications and developments had to wait, has been faithfully and consistently carried out’ (Gibbon 1918:7). That probably gave a sense of security to the riverain chieftains and they likely saw in the British a redeemer from the cruelties of the Turks and the Mahdists. Given these memories and the vastness of the country, according to Gibbons (1918:22),

The only policy with any chance of success was to direct the effort of the government towards the speedy amelioration of the unfortunate victims of the dervish rule, and to win their allegiance through lending them a helping hand. Their memory of Egyptian rule was hardly of a nature to recommend the new Government, and Egyptian soldiers were not looked upon as redeemers – even from Mahdiism, to which many of the most influential sheikhs remained profoundly attached as a religious dogma.

The British, therefore, found an ally in the riverain farming communities. It is, however, important to emphasise that it was in the interest of the riverain communities to regain their lost, once open, frontier for south- and westward expansion they lost during Mahdism.

It is these riverain farming communities that founded with the British the new political alliance. Riverain Sudanese represented the sub-state actors who were manipulated because of their belonging to the riverain region and because of other affinities which made them more homogeneous in contrast with other sub-state actors exemplified by the Arabs of the NRZ plains to the east and the west and the Africans who shared these domains and extended to the upstream RZ. Throughout this research we shall use these geographical “zones”, i.e. downstream RZ, NRZ, and upstream RZ, instead of the political “sub-state actors”, because the former, i.e. the zones category, is more comprehensive in serving our objectives and, moreover, is more tangible. In other words, since each zone has specific characteristics which largely apply to all sub-state actors inhabiting it, these zones may provide a more comprehensive picture than we could obtain by selecting some sub-state actors and generalising from them.

The riverain elite generated from the farming communities was not only meant to serve internal power controls, but also to be used in Britain’s competition with Egypt. ‘Since the British Sudan policy was intimately connected to control Egypt’s

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10. While Darfur was annexed by January 1917 (Harir 1993), it took the British until 1919 to subjugate the Nuba Mountains (Ibrahim 2002) and until late 1920s to put an end to revolts in the south. The south in particular had been more difficult to subjugate (Suliman 2000:165).

life-line of water upstream, the water question was central in creating a *new Sudan*, independent of Egypt, and in creating Sudan's *new riverain elite*' (Tvedt 1993:185, italics added). This wrought significant changes in the social setting where *elitism* became a principal pillar in maintaining the system. Besides the riverain elite, this new elitist structure had to involve traditional leaders from all regions who would be directly involved only later through the "indirect rule" policy.

Because of the fear of Mahdism, and the fact that Mahdism had 'unified and organised large elements of the diverse Sudanese population in opposition to foreign rule', as Barnett and Abdelkarim (1991:4) argue, 'it was neither desirable nor feasible in the long-term that the Anglo-Egyptian administration should control the country solely by military means'. A shift from the juridico-political technologies of control to economic ones, primarily through large-scale public works and associated subsidised services, would establish the alliance between the colonial administration and the farming community and be made to serve yet another significant strategic goal.

It was necessary to use the existing divisions within the Sudanese society so as to tie the economic interests of sympathetic groups to the new, foreign administration, and construct a civil administration on this base. It was in these circumstances that the development of irrigated agriculture in the Gezira had one of its firmest roots (Barnett and Abdelkarim 1991:4).

The second major root – the above being the first – 'which gave rise to the massive development of irrigated agriculture was the need to defend the declining British textile industry' (Barnett and Abdelkarim 1991:4). This certainly reinforced the alliance between the new administration and the riverain elite. So the establishment of the Gezira Scheme in the centre, according to Shepherd and El Neima (1981:14), was 'to reward supporters of the British re-conquest with irrigated land'. The scheme proved compatible with this goal and increasingly consolidated the alliance between the colonial administration and the newly rising agricultural capitalists. 'The Djazira scheme', according to Boahen (1990:199), 'proved quite beneficial both to the British and to those people of the Sudan who were directly involved in it'. Noteworthy is that besides the large-scale public works exemplified by Gezira, the British administration consolidated its alliance with the farming community by facilitating small- and medium-scale pump irrigation (detailed later). This provided a snapshot of modernisation in the downstream RZ, earlier than elsewhere in the country and made possible primarily by the area's earlier relative stability. While this largely continued in the downstream RZ, the remote regions continued as zones of stark instability throughout the last century, until today, with tribal revolts against the central government, civil wars, and tribal clashes all caused largely by the coercive nature of the state and its authoritarian development policies (Chapter 4).

Both the tribe and *sufi* sect underwent significant changes during the British rule as they were incorporated into the state machinery. The need for effective pacifica-

tion through a cheap administration that could generate revenue, was the most important reason for incorporating these two bodies. Following the introduction of monetary taxation, tribal chieftains were placed in charge of 'local government in disguise' and entrusted with the collection of taxes (Adam 1987:22). To bring this "indirect rule" into effect, the British colonial administration issued several ordinances defining the responsibilities of tribal leaders. In so doing, tribes were assigned a homeland and, according to Awad (1977:311), 'were encouraged to preserve their identities, echoing the old colonial policy of "divide and rule"'.

The renovated tribe served yet another purpose. In the newly established power bloc, tribal leaders counterbalanced both the traditional Mahdists and the modern nationalists (for details see Adam 1987:22, Sanderson 1989:67, Duffield 1977:301, Woodward 1989:120). 'The first administrators of the Condominium rule (1898-1955) found ready support from this nomadic stratum within Sudanese society, since a total change in the system was in their interest' (Ahmed 1986:3, see Adam 1987:23).

During the Condominium, the *sufi* religious sects resumed the role they had played before the Turkish and Mahdist rule to some extent (see Al-Karsani 1998:181). Without delegating administrative powers to them, the leaders of religious sects had also been incorporated for the same reasons. The prominent among them, namely the leaders of the Ansar and the Khatmiya sects, were given large tracts of land in the most fertile areas. In 1919, together with the tribal leaders, they went as a delegation to London to express their support for the King of Great Britain. This event was effectively propagated and traditional leaders accordingly promoted as being the only leaders with the capacity to represent the Sudanese people.

Independence would maintain those allied with the British, old and new, but would bring other significant changes. The British, who persistently presented themselves as a neutral party in the Sudanese political arena, now gave positions to the elite whom they had helped to create and empower – the riverain elite. This group not only espoused a bias towards certain constituencies and a drive to ally externally with an "Arab nation", but it also embraced a high sense of elitism, considering themselves to be the inheritors of the British right to rule the Sudan. Ahmed (1986:15-6) observes, 'there is a tendency for top bureaucrats, generals, and professionals (including doctors, lawyers, etc.) as well as other technocrats and intellectuals to see themselves as a special elite group that inherited the position of power from the colonial administration, and they behave as such'. This "special elite" was composed largely, if not totally, of riverain Sudanese, who at the moment of independence captured the bulk of the public posts (for details see Harir 1993). The re-socialisation of the riverain elite under British rule would now not only qualify them to be the *modern* leaders of the Sudan, but would also lead them to accredit themselves with the claim that they were in possession of "high culture" in contrast to the "rusty cultures" of those who had now become their "subjects" (see El Zain 2006b). The tendency of the group, referred to by Ahmed, to see themselves as special 'was strengthened by the fact that members

of this category, up to the first decade after independence, could trace their origins to the traditional elite in view of [the] access they had had to education. This element of continuity in the history of *relations to [the] power centre* granted them a *special position* on the political scene' (Ahmed 1986:16, squared brackets and italics added).

The elite ruled by establishing a hegemony which derived its power from the support of three circles and in confrontation with a fourth circle. The first circle is organic to the core elite group and is made of riverain farming communities. The second circle is an imagined Arab agglomeration, made up of different *Arab* tribes which can potentially be mobilised as a buffer zone should the third circle be agitated by outsiders. The third circle is made up of African Muslims, who belong to the nation by virtue of being brothers in faith. This consolidates the rule of the elite against threats coming from the fourth circle. That latter is made of those who share neither an Arab lineage nor an Islamic faith – often labelled as the “*janubiyin*”, the southerners. The southern Sudanese are demonised, particularly in connection with Nile hydropolitics; their region is considered the abode of threats to Khartoum and Cairo (Chapter 9) and, therefore, they are an important bogeyman for maintaining links between the three above-noted circles. A fifth circle is present in the Arab region under Egypt's leadership. This circle has always intervened to salvage/strengthen the corrupt elite when its legitimacy is lost and its rule is on the brink of collapse. Intervention of this circle often cuts short a process that would compel the elite to renegotiate a more just social contract and establish a fair social order. The excessive power that the ruling elite acquired from the fifth circle in particular made it insensitive to the devastation and cruelty of the wars it sustained over a period of 38 years (Chapter 4). Characteristic of the post-independence era are the feverish attempts to impose a hegemonic culture on every region in the Sudan, as a quest for a cultural centrism, necessary for issuing universal definitions of how the nation should look, the qualities of its top rulers and rights to own, access or expropriate resources. The centralisation process with the capital of the political system in the downstream RZ and particularly in connection with the most dynamic group in the political alliance – the *jellaba* – in addition to a regime of capital accumulation, would lead to concentration of economic development in the central RZ. This is detailed below.

### 3.3 Economic modernisation in the Sudan: Creation of the economic core

The economic dynamics of the pre-nineteenth century era show what could be considered a transitional stage in the development of the socio-political setting in the Funj Kingdom. It is interesting to note that the trade that started to flourish in the early eighteenth century continued its advance until the Turkish invasion of Sudan. James Bruce, who visited the Funj Kingdom in 1770, 'recorded at Halfaya', according to Pollard (1984:169), 'that the manufacturing of cotton

homespun “damours” was the chief source of livelihood and that the cloth was extensively used as currency. At this time the Gezira was intersected by several caravan routes.’ Trade by now linked many regions which would later be unified by the Turks under one political system. ‘In 1814, the Gezira was exporting cloth to Dongola, Kordofan, Darfur, Ethiopia and all of the Nubia to the Red Sea’ (Pollard 1984:169).

The Funj Kingdom had likely become politically weaker because of the now economically defined interests that continued to emerge. ‘When the Fung and the Abdallab quarrelled chaos ensued, and an increasing degree of chaos was developing in Sennar State by the end of the 18<sup>th</sup> century’ (Davies and Abu Sin 1991:4). It therefore generated the potential for the success of the Turkish invasion. ‘Mohamed Ali Pasha, with his ambitions to increase both his own and Egyptian resources, influence and prestige, took advantage of this and invaded the Sudan in 1821’ (Davies and Abu Sin 1991:4). It was this moment of transformation that has particular meaning for our discussion; had the invasion not succeeded, the population-resource map and the population-political map would have been different and, likewise, the nature of competing political discourses.

### 3.3.1 Economic modernisation during Turkish rule

Despite the fact that the Sudan is endowed with fertile lands and that the Turks of Egypt possessed well-established knowledge of agricultural methods, there was no serious engagement in agricultural development during Turkish rule. Due to the insecure situation, which the regime created through its brutal punitive campaigns in the north, large groups of population left their land. ‘The taxes were so high that some villages had to pay almost half of their produce every year to the state. In bad years, heavy taxes forced many villagers to flee their farms, moving to remote areas beyond the reach of the government’ (Mohamed Salih 1999:56). Agriculture in general stagnated due to the almost total depopulation of northern Sudan (Chapter 6) and the only economic activity that accrued revenue for the government was levying high taxes and engaging in trade, largely in non-agricultural commodities, namely human beings, ivory, and ebony.

Two decades elapsed before the Turkish colonizers started to consider agricultural development. This coincided with the time at which Europe was exerting strong pressure for the abandonment of slavery. Thus, instead of ferrying the Sudanese to overseas slave markets, new jobs had to be created for them. The Sudanese now had to till the land for the Turks through forced labour in order to compensate for the loss of the lucrative business, and many were made to serve as soldiers to bring more glory to the Khedive’s empire. Interestingly, all large-scale agriculture during Turkish rule was either irrigated from non-Nilotic rivers (Gash in NRZ) or from the rains in the upstream RZ. Irrigated agriculture began only later, in 1841 in Kassala Province in eastern Sudan with the construction of a 30 km irrigation canal (Mohamed Salih 1999:56) and the building of the Shatta Dam

(Warburg 1992:7). Rainfed agricultural development was started in places like Fashoda, where large tracts of land were cultivated with cotton, sugarcane, and maize (Ibrahim and Ogot 1990:366-7). Egypt's "empire" of the post-1820s was thus largely built by the toil of the Sudanese.

Human trafficking, which accompanied the forced labour, defined the fortunes of regions and established a "legal" status that divided Sudan into a "race of potential slavers" and a "race of potential slaves". Although the slave trade was an established institution in Sudanese kingdoms, including the Funj and Fur kingdoms, the coming of the Turks seems to have proffered an extraordinary momentum of large-scale expansion. Important to note in connection to this is the fact that the Turkish rule made slavery systemic in the sense that it engaged taxpayers, in one way or another, in conducting slavery. According to Mohamed Salih (1999:56), 'People were forced to grow more cash crops in order to be able to pay taxes to the colonial state; high taxes were forcibly levied or reluctantly paid in crops and slaves, as money was so scarce.' The *jellaba* enabled this to happen and made it an important economic activity. 'The *jallaba* of Kodrofan paid the Baggara's annual tribute to the tax-collectors and received in exchange a regular supply of slaves. Many of these slaves were then transported to the Nile Valley, where they were employed in agriculture by the riverain farmers' (Warburg 1992:3). Thus, during this era there were three groups of slave hunters, i.e., Turkish administration enslavement campaigns, private traders (Europeans, Turks, *jellaba*, etc.), and nomad tribesmen. All were interconnected in such a way that slavery flourished rapidly and the way it was conducted become highly organised (see Ibrahim and Ogot 1990:364).

The centrism of the Turkish rule in Sudan was translated into a concentration of wealth in the hands of the colonisers and their immediate collaborators. A hierarchy of beneficiaries had the Turks on the top, followed by their immediate collaborators (both natives and foreigners), then the category of men immune from enslavement with potential slaves at the bottom. Access to power and resources were thus set according to such racial/ethnic attributes.

In our understanding, it was the objects of trade (slaves) rather than uneven trade relations that generated an earlier uneven development among Sudanese regions. In other words, uneven development was caused by the drainage of the labour force into the RZ from the NRZ/upstream RZ. It is noteworthy that this pattern started before the Turkish invasion. Thus, the slave trade, in which the *jellaba* operated as middlemen, was not only beneficial to traders (Turkish and Sudanese alike) but also to those at the receiving end who used slaves to maximise their farm output and manage their herds. While this process engaged pastoralists such as the Humr (for details see Mohamed Salih 1999:113, Ibrahim and Ogot 1990:364, see also Warburg 1992:3), it was the riverain people who seemed to optimise its use. 'Since each *sagiyya* (water-wheel) was taxed at a fixed rate, labour-intensive production was essential to obtain high profits. Hence, slave-labour predominated quite early in the more fertile lands adjacent to

the Nile, while the more remote and less fertile areas remained under free-peasant cultivation for longer' (Warburg 1992:3). According to Spaulding (1998:58),

[T]he appearance in Keira times of private merchants served to connect the slave-generating potential of southern Kordofan to a totally new market of utterly unprecedented magnitude, for in the fields of the northern Nile-valley Sudan during and following the collapse of Sinnār, slaves were no longer desired merely to serve as precious cogs in an elite administrative machine, but to replace the traditional peasantry as agricultural labour.

This contributed to primitive capital accumulation before the arrival of the British and, in this respect, the *jellaba* who made up the core of this process of accumulation were ready to launch investment in modern capitalist agriculture by the beginning of the twentieth century (Chapter 4). Apparently, this was the embryonic dual economy in which the centre, intensifying labour by using slaves, was increasingly becoming richer, while remote regions, particularly the south, were losing able-bodied people to the riverain region, becoming impoverished in the process.

This new condition, in which groups of population lost their resources or able-bodied members, established the dynamics of enrichment/impoverishment. A serious disturbance of the balance of power and accessibility to resources took place. The state implicitly backed one faction of the natives against the others; as a site of power, it empowered one party with the support of a modernist state and deprived and impoverished the others. Or, apparently, it had re-organised the landscape, at least cognitively, into "open frontiers" for movements of *free people* and confinement of potential *slaves*. Mohamed Salih (1999:64) provides one illustrative example while referring to the Nuba Mountain people: 'Most of the Nuba still lived in the hills, as they had in the past (in order to protect themselves against raiding) and rarely ventured to the distant, fertile plains.' On the other hand, enrichment, relative to the impoverishment of those outside the political alliance, derived from the relative sustenance of the production process because of the "immunity" from enslavement of the members of the political alliance.

The significance of this account serves not only to view the processes that undermined the subsistence economy in the NRZ and upstream RZ and induced mass population movement, but also highlights the legacy of agony, racism, and hatred which Turkish rule planted on a large scale. This legacy continues to haunt the political interaction between Afro-Arab Sudanese and African Sudanese and that amongst the Afro-Arab Sudanese. It also contributed in no small part to defining the rules of dividing the national resource pie, inducing war, and, more importantly, spilling over into the hydropolitics of the Nile.

### 3.3.2 Economic development during the Mahdist era

Interestingly, despite its instability, the Mahdist state paid some attention to the development of the RZ. During the reign of Mahdism, cultivation methods were improved, allowing for the expansion of irrigable areas by the Main Nile for food as well as non-food crops (Adam 1987:20-1). Agriculture as well as trade under Mahdism was highly influenced by the war effort and geared towards providing arms and ammunition for the Mahdist army (Boahen 1990:198). If there was any other form of economic modernisation during the reign of the Mahdist state it was present in the development of handcrafts, small factories, and manufacturing shops (Adam 1987:21). However, due to the disruptive forces at work during this era, cotton cultivation almost ceased (Shaw 1987:153). A regime of extraction then predominated where the claimants of the farmers' and herders' produce increased in number (soldiers, bureaucrats, etc.), especially in the capital Omdurman (see Adam 1987:21). It was therefore natural that by the end of Mahdism and the beginning of the twentieth century 'Sudanese agriculture was in a very poor state' (Awad 1987:41). Trapped by the paradigm of its predecessor, the Mahdist state inclined towards forced labour and high rates of extraction (see Adam 1987:21, see also Awad 1987:40). The Mahdists plundered the South for conscripts for their own army (Ibrahim and Ogot 1990:375) and also maintained slavery (see Moorhead 1960:280-81), which greatly contributed to the south's further underdevelopment. Slavery remained throughout Mahdism despite its victims' contribution to this revolution.

### 3.3.3 Economic development during British rule

The most tangible impacts of the British rule in the Sudan was introduction of a modern agricultural system and the laying down of infrastructure made up of railways, ports, and dams (Boahen 1990:198). While modern agriculture started to spread along the banks of the Nile in central Sudan, railways 'built by the British originally for strategic and administrative reasons' (O'Brien 1985:24, Davies and Abu Sin 1991:7) were spread to link the most productive regions. The rail system aided the process of political centralisation a great deal (for details see Gibbons 1918:11-2, Boahen 1990:198-9).

Unlike the Turkish administration, the British engaged in grand economic designs, which however, were started only after the country was almost completely pacified. 'The completion in 1927 of administrative structures for the villages and nomadic population marked the expansion of the modern agricultural sector. The Gezira Scheme had been completed by 1926, the Nuba Mountains cotton industry was established in 1923, and the Toker and Gash delta schemes were operational by 1924' (Mohamed Salih 1999:58). Before that, in 1906, the first pump was installed (Gaitskell 1987:103) and the period that followed witnessed the spread and dramatic increase in the number of pump-irrigated schemes along the river,

marking as a corollary a clear decline in the number of water wheels (Awad 1987:51). Afterwards, the pump schemes increased continuously in numbers (details in Chapter 4).

The new economic structure installed by the British was predominantly inclined to the development of cash crops, especially cotton in the central RZ. In the words of Sørnbø (1985: 23), ‘The history of colonial economic development in the Sudan is very much the history of the development of cotton production.’ The spearhead for this development was the Gezira Scheme, which by establishing its Managil South-Western Extension became the world’s largest irrigated scheme under one management with a size of 2.1 million *feddans*<sup>11</sup> (Sørnbø 1985:23, see Abdelkarim 1992:33, Hassaballa and Eltigani 1995:25). Establishment of the Gezira Scheme was allowed by the completion of the Sennar Dam on the Blue Nile (Sørnbø 1985:23-4).

Unlike the Turkish regime, the British, through their infrastructure network, engaged the remote regions in the new economic structure. The administrative policies laid down by the British facilitated the marshing of economic factors, leading to engagement of small producers in increased production of cash crops to pay taxes and meet the demand for food grains in emerging towns and centres (Mohamed Salih 1999:58). Mustafa Babiker (1986:387), referring to the case of the Hamar in northern Kordofan, states, ‘Administrative policies at the local level having been solved, new roads were opened to link Dar Hamar with Darfur to the west and El Obeid to the east. These were seen as prerequisite for expansion of gum arabic production and the introduction of new cash crops.’ The incorporation of the Hamar area into both the national and world capitalist economy exemplified how a peripheral locality could in short time lose its distinguishing features.

Measures were taken by the colonial administration to increase the area under cultivation in the 1910s. The first step was the establishment of government posts in En Nahud, Abu Zabad and El Odaya. The function of these was envisaged as to “establish law and order and also assist in the resettlement of the tribes in order to increase the area under cultivation” (Babiker 1986:387-8).

This development was so fast and significant that ‘Dar Hamar, previously with modest trade, began to establish itself as an important commercial district in western Sudan’ (Babiker 1986:388).

### 3.3.4 Maintaining and aggravating underdevelopment in post-independence Sudan

Post-independence governments maintained the same administrative methods as those implemented during British rule. Dominated by the commercial bourgeoisie, primary export production remained the sacred goal (Babiker 1986:390, see Adam

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11. 1 feddan = 1.038 acres = 0.42 hectares.

1987:25). 'From the mid-1950s up to the early 1970s, patterns of economic investment and development plans favoured by the coalition of the ruling groups were basically an imitation of the colonial policies that gave priority to the modern (irrigated) sector and urban areas' (Ahmed and El-Battahani 1995:201, Al-Arifi 1977:137). Cotton, whose infrastructure had first been laid by the British, received greater appreciation. In 1966, the Sennar Dam was widened and the Roseires Dam constructed in order to irrigate the Gezira and the Rahad schemes for cash crops. This period witnessed financing in earnest for agricultural projects, including the establishment of special development banks, such as the Agricultural Bank in 1959 and the Industrial Bank in 1960. In 1961 the World Bank granted a loan of US \$15 million for the completion of the Managil extension and together with West Germany the IBRD financed construction of the Roseres Dam in 1961 (Holt and Daly 1979:177). The Gezira Scheme became the model for several other irrigated schemes established in the 1960s and 1970s. This cemented the current-day practise of concentrating economic development in the central RZ.

In developing the Gezira, a huge infrastructure was built that became determinant for establishing new schemes in the vicinity. When the Managil Extension of the Gezira Scheme was constructed in 1962, 'its conceptual aspects are to extend the use of *existing capital works*, and help maximize the use of future capital constructions, and increase the Gezira cotton production. The vital position of cotton in the National Economy makes the project a significant one in terms of economic development of the country' (Shaw 1987:161, italics added, for further details see Abdelkarim 1992:33). Even when it turned out to be 'an illusion of development' the Gezira Scheme was still seen as 'central to the overall capitalist development of the Sudan' (Barnett and Abdelkarim 1991:98). Most striking in connection with this declaration, i.e. being an illusion of development, is that until the late 1950s, according to Pollard (1984:177), 'the Gezira was receiving 77 per cent of all government spending'. What the Gezira lost at the end of the 1950s actually went to its new kin. Thus, at the centre of the irrigated system with new *irrigated* schemes emerging in its vicinity, the Gezira Scheme looked like a big hen feeding its chicks. The Ten-Year Plan (1961-71) allocated the bulk of public-sector investment to infrastructure projects, above all to the irrigated sub-sector, which by 1964 had absorbed 75 per cent of all investment designated for agriculture (Ahmed and El-Battahani 1995:201, further details in Holt and Daly 1979:177).

The outcome of this policy was the doubling of the irrigated area of the Gezira through the Managil Extension, namely for cultivating extra-long staple cotton (Shaw 1987:137, see Davies 1984:133). More ground was irrigated for the cultivation of cotton than was allocated to all other crops (Shaw 1987:148). The 1960s and 1970s also witnessed 'the establishment of Khashm el Girba, Guneid and Kenana schemes; the completion of part of the Rahad scheme; and an enormous increase in pump schemes replacing much of the shadouf<sup>12</sup>, sagia<sup>13</sup> and basin irrigation' (Davies 1984:133). Pump schemes increased in number and therefore acquired more importance. Yet, the most enormous increase of cultivated area

took place under mechanised farming schemes, which were rapidly acquiring millions of hectares in a process that continues up to today. (Details on these schemes are in Chapter 4.) The infrastructure built for the Gezira and its “chicks” increasingly came to serve the riverain elite and hardly spilled over to remote regions. The two nearest regions to benefit, albeit to different degrees, from this infrastructure were Khartoum Province and the Eastern Region.

As pointed out above, post-independence governments favoured the modern irrigated sector and urban areas. However, not all urban areas benefited from investment and development fund allocations; in fact the bulk of investment allocations again went to urban areas inside the “Triangle of Development” or at its fringes in the central RZ, particularly Khartoum Province. Here we will take a quick look at Khartoum Province, the second region in the central RZ, and one which illustrates the degree of investment made in urban areas.

Since 1834, when it became the capital of Turkish Sudan, Khartoum started to acquire the characteristic that would set it apart from its surroundings – it became the seat of power. By the early 1840s, besides government stores, Khartoum had a military hospital, a printing house, and other buildings (Davies and Abu Sin 1991:5). In 1885, Khartoum was destroyed by the Mahdists and regained importance only by the end of that rule. With the coming of the British, Khartoum was reconstructed and restored as the capital of the Anglo-Egyptian Sudan. By 1904 a steamboat route connected Khartoum to Khartoum North and by 1909 the Blue Nile Bridge not only connected it to further north Sudan through the railway, but also to the whole hinterland up to Sennar to the south and El-Obeid to the west (Davies and Abu Sin 1991:8). Referring to the national capital (Khartoum), Al-Assam and Khogali (1991:206) state, ‘The process of drawing activities to itself, begun during the Condominium has gathered even more momentum since Independence’ (for a detailed analysis see Shazali 1988:181-199).

In the post-independence era, Khartoum started to grow faster (Chapter 7) and as the seat of the elite who inherited the system from the British, it acquired more power and a larger share in development. ‘Today, Greater Khartoum has 76 per cent of the established industries, 80 per cent of banking activities, 75 per cent of the labour force employed in manufacturing and 80 per cent of the commercial dealings, together with an absolute concentration of insurance facilities’ (Al-Assam and Khogali 1991:206). Thus, like the infrastructure built in the Gezira, the one built in Khartoum allowed this city to acquire a larger fraction of investment allocations. Khartoum not only attracted industrial investment (El-Bushra and Hijazi 1991:256) but also agricultural investment (Chapter 8).

Thus, the central RZ, both in the past and currently, acquired the bulk of development allocations. Its two regions (i.e. Khartoum and Central) now maintain

12. *Shadouf* (also *shadoof* or *shaduf*) (an word) refers to an used to draw water usually from shallow wells, rivers or ponds.

13. *Sagia* (Persian wheel) is an animal-operated device for raising water.

their larger share and it seems they will maintain it for some time to come. The NRZ, especially Kordofan and Darfur, as well as upstream RZ are increasingly losing out to central RZ. This is strikingly evident in that 'of the 244 development projects initiated in the Sudan between 1978 and 1982, over 75% were located in the Capital and Central Regions, and though most of the population depend upon agriculture, it accounted for only 5%' (Abdel Ati 1991:170). This pattern continued in the late 1980s. 'The Industrial Bank report for 1987 revealed the distribution of its approved and sponsored [manufacturing] projects as follows: Capital Region 48.6%; Central Region 25.1%; Eastern Region 18.4%; Northern 4.2%; Kordofan and Darfur Regions 2.6%; and the whole South 1.1%' (El-Bushra and Hijazi 1991:256). Thus, the central RZ was acquiring 73.7 per cent of manufacturing investment. One example in connection to services is that all specialised hospitals are in the central RZ, with eleven in Khartoum and two in Gezira (El-Bushra and Hijazi 1991:257). In relation to higher education, until the early 1990s, of the six universities in the country, five were in the central RZ (four in Khartoum, one in Gezira) and one in Equatoria (see El-Bushra and Hijazi 1991:257). Currently, Khartoum hosts 75 per cent of higher education institutions as well as three-quarters of students in higher education (Bannaga 2001:39)

Concentrating political as well as economic power, the central RZ became the core of the elite in the Sudan who still today dominate and manipulate decision-making and design and implement economic policies. Thus, Nile development in the Sudan contributed to create regional disparities, largely due to a riverain-centric view, which presented the whole landscape of the Sudan in terms of how it could generate revenue. The modernist riverain elite learned to grow plants, but not to preserve trees; they learned to deal with crops, but not other "weeds" and with crops they outsmarted their neighbours by going for cash. It was as if the ruling elite wanted all the world to turn into cotton fields and so the greedy mechanised sorghum growers said, "Let all trees in the landscape be sorghum "trees"." Naturally, in the greater part of the half century since independence, almost all investment in agriculture has gone to the modern sector, meaning irrigated and rainfed mechanised farming. An acute bias against the traditional sector, both farming and pastoralism, and especially the latter, is maintained by and operates through special space-related development blindness. A quarter a century ago, Salih A. Al-Arifi (1977:137) argued, 'The separation between space and development has influenced the direction and magnitude of regional development patterns. Naturally, at the present time, investments favour big cities, irrigated areas, the Khartoum-Wad Medani corridor, and the clay plains.' The growth of a modern economic sector of commercial agriculture and import-substituting industry in the above areas – in and around the centre of national political power (Harir 1993:20) – ultimately encouraged more differences between these areas and the semi-desert (Al-Arifi 1977:137).

Development in the Sudan has been characterised by a continued bias toward the modern sector and an almost complete neglect of the traditional one. A feature

of this bias is the increased attention given to development of water resources in the downstream RZ, i.e. the development “blue water”, at the expense of developing both “green water” and groundwater in the NRZ. During British rule, unequal development became more apparent because of the engagement in capitalist large-scale agriculture that worked for the farming communities while working against the nomads. Large-scale agriculture, from its very inception in the Sudan, contributed to creating and enriching the riverain region and, in particular, the riverain elite.

While maintaining the ‘closed districts’ as a reservoir for cheap labour supply, the British Administration directed its attention and concentrated its efforts to the relatively more favourably situated central districts located in the north-eastern area of the Nile basin and the main tributaries of the Nile for the development of the ‘mono-crop export economy’ (Adam 1987:23).

A political and geographical determinism seemed to inform the inception of capitalist agricultural development in the Sudan. This development was a matter of accessibility concerned with the agricultural potential of the Sudanese provinces. When the British introduced the first modern agricultural schemes in Zeidab in 1905 and later on in the Gezira in the 1920s, the other fertile regions had not yet been pacified. The conquering and control of northern Sudan was the incentive for hasty investors to start implementing modern agriculture. The controllable downstream RZ was thus, unlike the unruly hinterland, the first to witness the first germs of capitalist agriculture. This set in motion a regime of accumulation that gave rise to the Sudanese agrarian bourgeoisie, which later played an important role in reshaping the Sudan’s economy.

Thus, besides building the increasing pump schemes along the banks of the Nile, the British, in the 1920s, transformed the fertile Gezira area along the hinterland western bank of the Blue Nile, into one of the largest cotton plantations in the world. The final outcome of the British colonial period, according to Adam (1987:24-5), ‘was the creation of a new agrarian structure based on the cotton plantation economy’. This, in his view, ‘had led to uneven and distorted development evident in the emphasis placed on the expansion of commercial farming in the “central regions” to the neglect of investment possibilities in the “closed districts” and in the outward orientation of the cotton export economy’ (Adam 1987:25).

The post-independence state’s perception of development of the regions continued in the same vein. ‘A common feature of every development plan designed during and after the colonial period is its neglect and disregard for rural population’s subsistence’ (Hassaballa and Eltigani 1995:29). The limited forms of rural development adopted were more concerned with sedentarisation than with providing for inputs for the traditional sector (for details see Babiker 1986:390, Davies 1984:133). Subsistence economies became increasingly distorted and were made to serve as part of the chain of the modern sector; or, as Shazali

(2000:109-110) puts it succinctly, the traditional sector became ‘the subsistence sphere of the (market-integrated) domestic form of agricultural production’. This, however, was achieved through the most effective rural development programme in the Sudan – that of rural water supply. A short note on this programme is due here, to show that the sector in the NRZ that received considerable attention from the government and had been crucial to maintaining the annexation of the remote regions itself started to decline. A premise that we shall advance here and examine in detail in the following chapters is that the annexation of the other watershed to the Nile Valley through rural water supply became a reality and was completed and the decline in the provision of water is also real and has one important consequence – core to our research problem – i.e. population movement towards the RZ.

### 3.3.5 Rural water supply and relations between the NRZ and the RZ

In this section we will argue that the NRZ has great potential to develop water resources, as initially proposed at the beginning of the last century. But this potential has been increasingly neglected in recent decades. Starting early in the last century, the British administration engaged in projects to provide water to rural communities, particularly in western Sudan, with the view of achieving sedentarisation and villagisation (Chapter 7) both for strategic and economic reasons. For post-independence governments, rural water supply was crucial for incorporating the western regions, and maintaining it continued to be the major guarantee for this incorporation. Phrased more strongly by Shepherd and El Neima (1981:14), ‘Through the provision of water the government can maintain the legitimacy of the West’s incorporation in the nation.’ This provision of rural water, actually, proved efficient and the government, as Table 3.1 suggests, seems to have maintained it steadily (see Davies 1984, Babiker 1986). The period between 1953 and 1960 witnessed the building of 700 wateryards (each with storage tanks, watering troughs, and taps for domestic use) as well as ponds, of which there were 470 by 1960 in the clay plains, while in the sandy areas drilled bore-holes were constructed with diesel-driven pumps for lifting water (Wallach 1989:145).

Within a time span of three decades, Table 3.1 and 3.2 show a clear decline in the proportion of *hafirs* (small dams or ponds) from 66 per cent to 49 per cent and of wateryards from 61 per cent to 42 per cent in the west (in Kordofan and Darfur regions). As Shepherd and El Neima (1981:15-7) note, the decline was mainly borne by the two semi-arid and arid provinces in those two regions, i.e. Northern Kordofan and Northern Darfur, respectively. Since the 1980s, however, *hafirs* seem to decline numerically or in terms of their capacity because of lack of maintenance, hence, leading to serious shortage in water supply (for details see Ali 2003 231-2). Darfur, for instance, had only 115 *hafirs* in the year 2003 (Ali 2003:231), meaning that a large number of these water sources had gone out of

Table 3.1: *Hafir (small dam or pond) construction 1947-77*

Region	1947-56	%	1956-65	%	1965-77/8	%	1947/8-77/8	%
East	33	14	41	17	57	21	131	18
Central	49	20	49	21	79	29	177	24
West	161	66	146	62	132	49	439	59

Source: Shepherd and El Neima (1981:15).

service. In one locality, namely Ad Deain, Ali (2003:240) notes that about 50 *hafirs* are out of service. The brunt of the resultant water shortage falls on the vulnerable segments of society, namely women, children, and the elders, as it is often the case that the able-bodied members of the household migrate for work in the central RZ.

Rural water supply was clearly used for power to control the NRZ, ultimately serving to sustain the entrenched power relations of the riverain elite seated at the confluence of the Niles. Thus, while political and economic power in the central RZ was boosted by the use of irrigation water in constructing large-scale agricultural schemes, in the NRZ it was expanded through supplying rural water for extending the hegemonic power alliance.

However, this evolution of rural water supply system generated environmental problems (see Al-Awad *et al.* 1985), namely from concentration of facilities, especially in connection to wateryards. These caused the concentration of large herds, leading to overgrazing (Chapter 4), given that each wateryard ‘consists of one or more boreholes and a system of storing and delivering water for collection’ (Shepherd and El Neima 1981:16). Policies for controlling herds, land use, etc., either were not given due attention or failed due to implementation methods (for details see Wallach 1989). Especially in the period following independence, accelerated water provision instead took place only in the richer regions; those which already had relatively better water supply systems. ‘In terms of the distribution of water, the coming of the national politics to the Sudan has favoured the central area of the country – an area already favoured by its rivers’ (Shepherd and El Neima 1981:15). This trend, actually, shows a concentration of political and economic power in the central RZ, despite the claims of decentralisation.

The original bias in favour of investment in the west during the colonial period, perceived as the most needy area, as it still is commonly perceived, has been scaled

Table 3.2: *Numerical and % distribution of wateryards by region, 1966 and 1978*

Region	1966	%	1978	%	% change
North	6	5	78	4	-1
East	7	6	97	5	+1
Central	30	27	952	49	+22
West	69	61	827	42	-21

Source: Shepherd and El Neima (1981:16).

down, arguably because of the political dominance of the central area of the country during the post-colonial era when the Sudanese class structure has been the prime influence on investment decision-making (Shepherd and El Neima 1981:15).

Inherent to this bias are political (partisan) and sectoral (ministerial) competition between the downstream RZ and NRZ constituencies. The year 1965, as Shepherd and El Neima (1981:24) note, witnessed the establishment of the Rural Water and Development Corporation (RWDC) with the goal of carrying out the first Anti-Thirst Campaign outside the irrigated and riverain areas of the country. The three years to follow witnessed a significant increase in rural water supply facilities; on average about 33 *hafirs* (ponds), for instance, were constructed annually. ‘Drawing on funds donated by Sweden, Great Britain, Egypt, Yugoslavia, Czechoslovakia, and Italy, the Sudanese government launched three annual “anti-thirst campaigns” between 1966 and 1968 to dig more than one thousand shallow wells, to drill and equip almost five hundred new wateryards, and to excavate another hundred ponds’ (Wallach 1989:145). This increase was justified by the fact that the government of the day received most of its support from beneficiaries from these facilities, primarily located in the NRZ. ‘Significantly, under a government dominated by the Umma Party with its support coming from pastoral and semi-pastoral areas of the country (Darfur, Kordofan, Blue Nile Province), the RWDC was placed under the Ministry of Animal Resources’ (Shepherd and El Neima 1981:24). Under the revolutionary May regime the construction of *hafirs* continued with over 20 new *hafirs* per year until 1978 (Table 3.1). However, most of the *hafirs* seem to have been constructed in the good days of socialist zeal. Heinz-Ulrich Thimm (1979) notes that between 1967 and 1972, ‘the number of wells in the west increased fourfold’. Under the May regime, the RWDC and the Cooperatives Department were merged to form the Ministry of Rural Development and Cooperatives (MRDC), ‘with a view to integrating peripheral areas of the country more fully into the national economy, using an old carrot – water supplies – as well as a new package – rural development.’ (Shepherd and El Neima 1981:24). Given the mixed economies of these regions, the placing of the RWDC under the Ministry of Animal Resources was probably a fair decision and likely more genuine than creating a separate ministry. However, this move, interestingly, would be undermined by the ministry charged to enhance agriculture in all its sectors. Referring to the creation of MRDC, Shepherd and El Neima (1981:24) state, ‘ministerial status was clearly threatening to vested interests (e.g. the Ministry of Agriculture operating mostly in the powerful riverain areas of the north, and the Ministry [i.e. MRDC] was disbanded in 1974.’ Later, rural development became a section in the Soil Conservation, Land Use and Rural Water Planning Agency (SCLURWPA), a division of the Ministry of Agriculture, whose budget was slashed every year to the point that it could no longer carry out new works and had to reduce staff drastically (Shepherd and El Neima 1981:24). Sectoral interests, reflecting the interests of the population in

the downstream RZ, clearly obstructed the philosophy that should have uplifted the status of thousands of NRZ rural households, especially if rural development associated with rural water supply had had a supplemental irrigation dimension.

Thus, water supply was part and parcel of the overarching bias characteristic of national politics in the Sudan. The bias of the ruling elite served to optimise and add to the existing infrastructure inherited from the British.

Thus, if we look at government development grants to regions, which often included a package for water supply, a striking bias towards the “enriched” downstream RZ regions becomes evident in contrast to the “impoverished” NRZ ones. ‘When revenue allocated to the regions is related to their population size’, as Table 3.3 shows, ‘the Northern Region came out as the most favoured, followed by Central, Khartoum, Eastern and Kordofan, with Darfur ranking last’ (Fadlalla 1986:217). It becomes more striking when we see the criteria for allocating the central government funds. These are (i) the degree of relative backwardness; (ii) population size; (iii) measure of tax effort; (iv) special locational and social characteristics; (v) commitment to major national schemes (contribution to GDP); and (vi) habitable area (Fadlalla 1986: 221). Relating this to actual allocations, a clear mismatch manifests. Giving a weight value of 40 per cent for degree of backwardness, 30 per cent for size of population, 10 per cent for tax effort, 10 per cent for locational and social characteristics, 5 per cent for contribution to GDP and 5 per cent for habitable area, Fadlalla (1986:225) points out this bias. According to him, if criteria were applied soundly ‘the Northern Region, though relatively poor, is less competitive for help on other grounds and hence would have suffered a remarkable 36 per cent reduction in its grant. Similarly, the Central Region would have had a reduction of 27 per cent.’

From the above we may observe that the larger the share of the pastoralist sector in the economy of a region (or, to be more precise, the larger the herd of a region), the more neglected the region or the less development funds it received. In this respect, Darfur and Kordofan with the largest herds in the country, respectively, received a revenue of less than 16 per cent per capita, the other NRZ region, i.e. Eastern Region, received more than 16 per cent per capita, the richer irrigated Central Region received more than 17 per cent and the Northern Region, received 48 per cent, remaining an odd case. Even the above empiricist criteria show the

*Table 3.3: Revenue allocated per capita, 1983/84 (£,S)*

Region	Allocated revenue	Population	Revenue per capita
Northern	52,000,000	1,083,024	48.0
Eastern	37,000,000	2,208,209	16.8
Central	72,000,000	4,012,543	17.9
Kordofan	47,500,000	3,093,294	15.4
Darfur	38,000,000	3,093,699	12.3
Khartoum	31,000,000	1,802,299	17.3

Source: Beshir Omer Fadlalla (1986: 217).

width of disparity and bias of development policies towards the downstream RZ. A clear bias to the downstream RZ regions, whose per capita share ranges between 17 and 48 per cent, while that in the NRZ was between 12 and 17 per cent as is presented in Table 3.3. However, looking more closely, we realise that the contribution to GDP is the area of controversy *par excellence*. The criteria applied assume that all regions get equitable input allocation. Whereas there are regions that benefited from receiving all forms of production inputs since the 1920s, others received hardly any. Along with Walter Rodney, Babiker (1986:392) describes this situation in connection to peasants of a locality in the NRZ region of Kordofan, 'The Hamari peasant...went [into] colonial rule with a hoe, came out with a hoe, and is, after nearly thirty years of political independence, still with a hoe' (see also Kevane and Stiansen 1998:36). The Hamar area is probably second only to Gezira in producing groundnuts. With regard to gum arabic and sesame, Dar Hamar is almost certainly the major producer compared to other localities.

The western regions (Kordofan and Darfur) contribute a significant share to revenue from livestock exports as well as to the local and national consumption from this sector (see Visser 1989:323, Ibrahim 1996:260). Almost all of the Sudan's trade in camels originates in nomadic areas of Butana, North Kordofan, and North Darfur. The nomads of the savannah and semi-desert zones own 75 per cent and 90 per cent of the country's wealth in cattle and sheep respectively (Dept of Statistics 1996:155, see Ahmed 1987:134).

Yet, the pastoral and agro-pastoral sectors with significant potential suffer from acute neglect. 'The Ten Year Plan (1960-1970) completely neglected the nomads, and the share of their sector in the government investment plan was insignificant (only 0.65 per cent)' (Ahmed 1987:134). Even the Five-Year Plan (1970-75) with its objective of increasing livestock production by 75.5 per cent allocated only 0.98 per cent of its public fund to this sector (Ahmed 1987:134). The state marginalisation of the pastoral sector has continued even under the current government, which, unlike previous ones, seems to develop feverish rhetoric about the pastoralists and developing the pastoral sector (for further details see Ibrahim 1996:269, Egeimi 1996:42). Of the proposed fund of 464 million Sudanese pounds to be allocated to the management of range and pasture in the period 1989-94, as part of the National Comprehensive Strategy (NCS), only 16 per cent has been spent (Ibrahim 1996:265). The NCS plan has also maintained the old bias towards agriculture and avoided raising the issues that directly affect the pastoralists and curb their development – 'the question of land tenure and entitlement to land use and the impact of all this on the pastoral sector were not raised' (Ibrahim 1996:269-70).

Unequal development and allocation of central government grants stems from overlooking the potential of sectors and comparative advantages in other regions – perhaps stemming from a "cotton ideology", which largely disguised this potential while propagating that of Gezira. This ideology redefined the resources in

the Sudan – which should be conserved or financially subsidised and, therefore, which communities benefit from state amenities and which do not. Even the areas with the most potential for cash crops were considered marginal for government investment, as they continued to pour their produce into export markets free from any significant contribution by the central government. A striking example is the regions which produce gum arabic, primarily Kordofan Region, which shows how the “cotton ideology” effectively disguised economic potential.

In the nineteenth century and before cotton took over (Suliman 2000) Kordofan had the lead among regions. Alan Moorhead (1960:210), referring to the early 1880s, described Kordofan as ‘the richest province in the Sudan’. According to Stiansen (1998:83), ‘Gum Arabic export increased from roughly 3,000 *qantars*<sup>14</sup> at the turn of the century to an average of 20,000 *qantars* (or roughly 900 tons) in 1850’ (underline original). With the advent of the British, Sudan’s gum arabic exports gained momentum, increasing from 2,000 tons in 1899 to 19,615 tons in 1912, contributing as much as 43 per cent of the total export earnings (Stiansen 1998:84-5). In the good season of 1931/32, export reached 27,000 tons and kept increasing to average just below 50,000 tons in the 1960s, before decreasing in the 1970s (Stiansen 1998:85). Gum arabic, together with groundnuts, sesame, and livestock represented the main export items in the first three decades of the British rule (Abdelkarim 1992:14). Until today, Kordofan is the main region for producing and marketing gum arabic (Suliman 2000:204), though recently its contribution dropped dramatically due to drought and desertification. According to Al-Mahal and Omer (1992:45), Kordofan currently contributes half of Sudan’s gum arabic, which has an 85 per cent share of world product, with the remaining produced in Kassala, Blue Nile, Darfur, and White Nile states. Despite this potential, Kordofan is now one of the most impoverished regions in the Sudan – more telling is that it is the region with the highest out-migration rates in the country as we shall see in Chapter 6.

Even while the prevailing order facilitated and prioritised irrigation, small-scale irrigation in certain NRZ regions was denied assistance or positive engagement. ‘The existence of massive pasture resources and huge herds of animals in the West and East went largely unnoticed except as security problems by a government concerned to promote a stable support group of yeoman farmers’ (Shepherd and El Neima 1981:14-5).

The condition of poverty generated by the centre became the yardstick for allocating government funds and investment. *Impoverished* regions, thus, were judged as being permanently poor. Poverty, and not impoverishment, was conceived of as the nature of things in those regions – it was viewed as a constant historical feature and the presently unchallenged situation. Economic marginalisation in this process became a “natural” consequence, though at a later stage it contributed to further forms of marginalisation. However, this economic

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14. One *qantar* equals 50 kg = 1/20 of a tonne.

marginalisation was largely caused by political marginalisation. According to Shepherd and El Neima (1981:14), '[T]here are natural resources outside the central growth area which have not been developed because the political impetus was repressed.' The building of the power bloc with the RZ farmers' community at its centre resulted in the exclusion of pastoralists and agro-pastoralists in the NRZ and upstream RZ regions. The political marginalisation of pastoralists can be seen, according to Egeimi (1996:42), in their non-involvement in state-designed and implemented development policies, as embodied in the budget allocations of the central government. This is part of a structural regime of control. 'The central state, since [the] 1820s with [its] capital located at the confluence of the Niles, has hindered development of locally legitimate, powerful regional institutions' (Kevane and Stiansen 1998:40). It effectively captured the resources of the localities and bedevilled their dwellers.

### 3.4 Conclusion

This chapter showed how the Sudan was founded largely by external strategic imperatives, namely control of the Nile and the importance attributed by Egypt to whoever takes control of it. Striving to control the Nile, colonial Egypt in the nineteenth century significantly transformed what would become the current Republic of the Sudan. Through centralisation, it dismantled Sudan's loose-knit political systems and detached northern Sudan from its cultural milieu of the Sudanic belt and positioned it along the Nile axis with its political centre, Khartoum, at the confluence of the Blue Nile and the White Nile. Britain, which colonised Egypt and used its legal claim to the Sudan to re-conquer it, carved out the Sudan with its current borders. Britain made sure that all of the streams pouring into the Nile from the west and south-west were included as part of the Sudan. Great Britain's strategic interests brought together a multitude of kingdoms and ethnic groups to make the largest country in Africa, essentially to serve as drainage territory for safeguarding Egypt's interests.

The imperatives of control necessitated the maintenance of the nineteenth century seat of power at Khartoum and the creation of a new political alliance involving riverain farming communities in the vicinity of Khartoum and in the earlier pacified region to its north, and the establishment of the colonial administration and riverain farming communities. These imperatives led to the development of the downstream RZ earlier than that upstream, namely by using Nile water. In fact, the political alliance itself came to be defined through this means of production. The Nile Valley, which rose as the most politically dominant area following the Turkish conquest, would now consolidate its political and economic power. It would concentrate economic development in its domain (the central RZ) and facilitate the economic superiority of communities living on its riverbanks over the largely traditional farmers and pastoralists in the NRZ and upstream RZ. The maintenance of a superior position, politically and economi-

cally, over other zones allowed the elite in control of the state and those backed by this state limitless expansion in the form of the capture of large expanses of lands inhabited by communities in the NRZ/upstream RZ. The power retained for the Nile Valley came at the expense of the NRZ and upstream RZ which were annexed coercively and where water resources were either undeveloped or developed in such a way that resulted in environmental degradation and ultimately, the plight of communities inhabiting those zones. A “cotton ideology” defined the fortunes of regions, where the irrigated Gezira started to take the lead, while regions, such as Kordofan, which had previously been leaders in economic development deteriorated rapidly. Almost all development projects were constructed in the central RZ, while most of the regions suffered the lack of basic needs. We emphasised that while the downstream RZ source of water, basically the Nile, was developed rapidly, throughout all the other regions water resources were either marginally developed in a way that entailed significant negative impacts, or were totally neglected.

Although this expansion took pressure off the Nile for some time, it generated conditions that would bring major transformations to the Sudan. These transformations are elaborated on in the following chapter.

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## 4 Normalising Environmental Scarcity: “Open Frontier”, Land (Ab)use, and Resource Conflicts

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### 4.1 Introduction

This chapter highlights what is happening in the desert – one of the four components of life in the Nile Valley – and in other drylands and wetlands that lie partly within the RZ and partly within the NRZ. The chapter argues that almost certainly from the seventh century up to the 1920s, the narrow arid RZ of the Nile Valley has been sending waves of its “surplus” population as well as escapees to the NRZ and the upstream RZ (detailed in Chapter 6). The NRZ and the upstream RZ thus represented an “open frontier”, which not only practically relieved the downstream RZ, particularly the arid part of the Nile Valley (i.e. the arid RZ) of its congestion, but also created a belief among its inhabitants that this “open frontier” was always there and would always be available if it were needed to expand into. The NRZ and upstream RZ were truly the abode of “alternative sources of water”. Their “green water” maintained the livelihoods of the bulk of the population of the current Republic of the Sudan, including immigrants from the irrigated parts of the downstream RZ. In the early eighteenth century, the arid RZ began to extract from the NRZ/upstream RZ “surplus” *water-rich products* and it began human trafficking, which drained hundreds of thousands of able-bodied men and women from these regions, both for export and for domestic farming and herding (Chapter 6). The downstream RZ permanently resolved its problems by sending out its “extra” population to reduce demand for resources and maintaining resource flow at the same rate.

This chapter focuses on the environmental processes that ultimately led to population concentration in the downstream RZ. The chapter argues that since the mid-1950s, the elite seated in the central RZ not only maintained the regime of extraction, but it also engaged in effective resource capture in the NRZ and upstream RZ. Through the lenses of “frontier-cast ideology”, the ruling elite saw the whole landscape of Sudan as a “wasteland”, unvalued by its inhabitants. This land therefore was available for development and they (i.e. the elite) were the ones who should develop it – they were, after all, the modernist elite, a self-perceived superior breed, believing that they should not be bound by land tenure limits in pursuing of their “development” mission (El Zain 2006e). This percep-

tion provided the lens through which the landscape and the rights of its inhabitants were seen, and is largely responsible for the resource conflicts which have haunted the Sudan for decades since. It ultimately blocked the “open frontier”, depriving the downstream RZ of its “virtual waters” and, additionally, overwhelming it with its immigrant/displaced stock.

The persistent resource capture led to acute environmental degradation and generated conflicts at the local and regional levels which culminated in the contemporary anti-hegemony civil wars. The driving force of civil wars – the claiming back of communal resources from the state and hegemonic groups – has practically blocked the “open frontier”, and even put into question the validity of the notion of the “open frontier” itself. It reversed what we refer to as the “millennial pattern” of population movement, thereby causing population concentration in the RZ on a regional scale (Chapter 6) as well as in urban areas (Chapter 7). In connection to this, this chapter argues that the “alternative sources of water” – alternatives to surface Nile water – which were believed to be available to the Sudan to relieve the Nile water from pressure recently proved other than previously conceived. The rainfed zone, where this “alternative” could be attained, is not a serene environment where everything is going okay; in fact, it has turned into a zone of tempests, which makes it hard to optimise the “green water” available within it.

This chapter is divided into three main sections. Section 4.2 details resource accessibility in relation to land-tenure systems and land use under four regimes (i.e. the millennial, the Turkish, British, and post-independence) with the aim of investigating the driving forces of “resource capture”. Section 4.3 examines “ecological marginalisation” and looks at the regime of environmental degradation it generated. Section 4.4 discusses the conflicts, including the contemporary anti-hegemony civil wars, which are, presumably, caused by this process of “resource capture” and “ecological marginalisation” and the consequent environmental degradation.

## 4.2 Resources historically and driving forces for “resource capture”

Natural resources in the Sudan differ according to ecological zones. In fact, these differences have largely defined differentiation among communities – “sub-state” actors – and conflicts between them. Harrison and Jackson (cited in El Moghraby 2003:28-9) classified the Sudan into seven ecological zones also with slight differences, presented in Table 4.1. Firstly, there is the desert zone, which covers about 30 per cent of the north of the country with annual precipitation less than 50 mm, sandy soils and sparse vegetation growing on seasonal *waddis* (streams) and along the banks of the Nile. Second is the semi-desert zone, which covers about 20 per cent of the country south of the desert zone with rainfall ranging between 50 and 300 mm. This zone is speckled with a few acacia trees, thorny bushes, and zerophytes. Third is the low rainfall woodland savan-

Table 4.1: Rainfall and ecological zones of the Sudan

Ecological zones	Rainfall in mm	Area km	%
Desert	0-75	718.07	30.7
Semi-desert	75-300	486.40	20.8
Low rainfall savannah on sand	300-400	680.90	29.1
Low rainfall savannah on clay	400-800	340.40	14.6
High rainfall savannah	800-1300	81.08	3.5
Flood region	800-1000	24.32	1.0
Mountain region	800-1000	6.40	0.3

Source: Harison and Jackson 1958 (in Kamil Ibrahim Hassan 2003:4).

nah, which covers about 27 per cent of Sudan's area. Rainfall here is less than 900 mm. The dry period lasts some nine months and annual grasses are dominant. Within this heavily populated zone are most of the 36 million *feddans* of rainfed agricultural lands and 4 million *feddans* of irrigated lands. Heavy clay soils dominate east of the Nile while the west of the Nile is sandy. Fourth is the high rainfall woodland savannah zone, which comprises 13 per cent of the country's area. Here rainfall exceeds 900 mm and broad-leafed trees vegetate the southern territories. Fifth is the swamps zone, which covers about 1 per cent of the country and extends into three main areas around the tributaries of the White Nile. Sixth is the highlands zone, which makes up less than 0.3 per cent of the country's territory, with portions scattered along the Red Sea coast and the southern and the western parts of the country. Finally, there is the Red Sea coast-marine ecological zone (see also Hassan 2002:8).

Growing richer southwards, the above-mentioned ecological zones carry a principal "contradiction" in connection to the distribution and size of population benefiting from these resources. 'Population distribution is inversely proportional to vegetational cover in such a way that 78% of the Sudanese inhabit northern areas with only 33% of cover (which already decreased to 18%). The remaining 22% inhabit the southern parts with 67% of the forest area' (El Moghraby 2003:33). This inversion, as we shall see, is a major reason for conflicts in the Sudan, compounded by the position of the state, state-backed groups and different communities in relation to land ownership. The implication for the Nile is that these conflicts, largely caused by the absence of proper land-use policies and reinforced by an entrenched frontier-cast ideology, have squandered the benefits of "green water".

Four categories of tenure systems in the Sudan can be discerned for the period under study (1820-2004). These are the communal, the state-owned, the private, and the overlord ownership tenure system. That last is defined by the existence of an overlord with the right to extraction from the produce of those who till the land as well as the right to evict tenants in cases of disobedience. All these distinctions do not apply to every historical epoch. In fact, some emerged only in connection to the state's intervening in re-arranging a presumably prevailing communal

land-tenure system. In other words, it is the resources captured by the state from communally owned lands and bestowed on individuals and/or communities that define current forms of land ownership in the Sudan. We shall clarify this below by looking into the evolution of land ownership under regimes of control in the Nile Valley, with a short note on the “millennial regime”. Assuming a prevailing communal ownership in ancient and modern times in the Sudan, we shall investigate whether changes in political regimes have increased the incidence of “resource capture” in the period between 1820 and 2004.

#### 4.2.1 Accessibility to resources under the “millennial regime”

A communal system of land tenure has prevailed in the different regions of the Sudan throughout different epochs in history. According to Adam (1987:15), the manner in which land was ‘the collective property of the community as a whole’, which prevailed since early Sudanese society, still features ‘in barely modified forms in localized pockets in certain regions of the country’. While Adam (1987) maintains that this communal ownership characterises ancient and modern Sudanese history, Awad (1987) suggests that a feudal order prevailed over and characterised both pagan and Christian Nubia in much earlier times. For Awad (1987), it was the advent of the Arabs in the seventh century that transformed the existing tenure system both in the downstream RZ, where it resulted in private ownership, and on the NRZ plains (east and west of the Nile), where it reinforced communal ownership. ‘The system of land tenure which the nomadic immigrants brought with them had more in common with the one which their ancestors had known in the Arab peninsula before Islām than with the system which their contemporaries in the riverain areas were practising’ (Awad 1987:37).

It is thus possible to argue that, at least, since the seventh century, this communal system prevailed throughout the country, except for in limited areas along the banks of the Nile in northern Sudan. ‘Communal landholdings are found on the *qoz* (sand) and clay plains running across the center of the country and in the ironstone plateau of the southern Sudan. They cover river deltas, rainlands, pastures and some waste land and forests, and they add up to 40 per cent of the area of the country’ (Awad 1987:39, underline original). This system is characterised by expansive land use, with the percentage of cultivable land and pastures under communal possession tending to be higher than that of lands under the state possession (Awad 1987:39). Awad attributes an enduring character to this system of land tenure. The ‘communal landholding in the central plains has remained since the days of mass Arab immigration the backbone of the Sudanese system of land tenure. Neither the conversion of some of the nomadic tribes into sedentary farming communities nor the revival of the principle that all the land belonged to the supreme ruler could weaken these institutions’ (Awad 1987:38).

A communal domain’s boundaries probably changed only if a tribe’s land was conquered and taken over by another tribe or by invaders, or if a merging of tribes

led to a merging of their borders. However, this system became increasingly subject to state claims and contrary to Awad's claim that communal tenure institutions were not weakened, they did undergo significant changes in the course of wealth accumulation in recent Sudanese history. Below we shall see how the state claimed communal lands in different epochs.

According to Awad (1987:36), state-owned land, known as *miri*, first appeared as an institution after the displacement of the Christian dynasties of Makarra by the Muslim kings in 1315. However, with some other institutions such as reserve (*matrukah*), dues-paying (*kharaj*), and leased (*hikir*) lands, state ownership of land became established under the Funj and Turkish administrations (1504-1885). During the Funj era, the sultan 'exercised his power as the sole possessor of the land' (Adam 1987:16). In this capacity and for the purpose of consolidating power, the Funj sultans granted land to notables in their dominion (Awad 1987, Adam 1987).

A similar development in granting land titles also took place under the Keira Sultanate in Darfur in connection with Sultan Musa Ibn Suliman (1680-1700). To encourage the *fugara* (religious teachers) who were preaching Islam to settle in Darfur, the sultan granted them *hawakir* (singular *hakura*), i.e. estates, which were also granted to merchants from the Nile Valley (Abdul-Jalil and Umbadda 1986:346).

It is these developments which Adam (1987:16-8) refers to as the beginning of a feudal system involving the Funj, the Fur, and the Nubian agrarian structures, whose embryonic form appeared in the first part of the fifteenth century and which became more articulated in the early nineteenth century. The *hawakir* system was described by Abdul-Jalil and Umbadda (1986:346), along with Huberman, as having 'some parallels with the feudal system in Europe'. The regulations prevailing in the three regions, i.e. the Funj, the Fur, and the Nubian, provided for the earliest forms of resource capture.

Depending on its definition of "surplus communal lands" the state effected what could be considered a "land reform" or a land redistribution. Some groups who were part of the political alliance or who were needed for other economic purposes were allowed to penetrate or even conquer other groups' lands.

Occasionally, the Funj rulers (and, later the Turkish governors) granted some of the unused communal lands to landless groups as a reward for them or in an attempt to develop the territory. It was in this manner that the Shayqiyah came to occupy large tracts of Ja'āliyin lands, and the Dongolāwis occupied parts of Dār Hamid's lands until they were ousted by the Mahdists (Awad 1987:39-40).

It is fair to argue that during this era communities from the arid RZ who benefited from land grants due to the state's legitimisation would have had difficulty, or even been unable, to acquire the lands by themselves. This set an important precedence that from then on would feature as a link binding the land-hungry arid

RZ groups to the state apparatus – their becoming an almost permanent part of the political coalition, especially upon the advent of colonial power.

Leaning on the state's apparatus, the arid RZ groups persistently maintained their access to resources. With a history of private ownership in their historical Nubian homeland, the downstream RZ groups sought private rights to lands in the “communal” domain of the largely NRZ where they settled. Scarcity of resources made the arid RZ people innovative in finding different ways to access resources and eke out a living. In our understanding, one of the most effective strategies of the downstream RZ elite to access resources was to present themselves as religious men of high calibre, by claiming a blood bond with the Prophet Mohammed's family – a virtue that, for political reasons, became precious to the hinterland rulers. Riverain “religious” men then came to acquire large tracts of lands, on which they were in most cases exempted from paying taxes to the state. In this respect, *Sufism*, as an ideology, helped relieve the Nile Valley from its stresses in as far as it facilitated the acquisition of resources in the hinterlands. As most of their followers were “natives”, these religious men/feudal lords gradually assimilated into the local cultures and gradually lost their bonds with their original clans. Being integrated as such, they hardly disturbed the local inhabitants, which is why we find so many immigrant groups living in harmony with their hosts. However, this group would found the network of earlier immigrants that went on to establish the notion of “open frontier”.

It is important to note that during the Funj era tribes moved in a flexible manner, mainly along an east-west axis. From the borders of the Nile Valley (the arid RZ), they reached westward to Lake Chad (for details see Hassan 1977, see also Frantz 1977). Population movements along this trajectory made an “open frontier” of the western expanses for nomadic tribes. Arab tribes, due to the nature of their modes of production, but owing even more to the prevailing balance of powers, preferred the fringes of the desert along this Sudanic belt axis. It is likely that powerful groups in the ecological zones to the south kept Arab tribes at bay for quite a long time, compelling them to stay on the desert fringes. Arab nomadic tribes ventured to the south into the savannah belt only later when they built alliances with groups in the hinterlands, probably after being affected by a drought cycle.

#### 4.2.2 Resource accessibility under the Turkish reign

The 1820s brought significant changes to the Sudan. The Turks from across the desert invaded the country and ‘claimed ownership...by right of conquest’ (Stiansen 1998:77). While turning almost everything in the Sudan into booty, they scrambled for three sources of wealth in particular: slaves, gold, and products associated with land exploitation (Adam 1987:19, see Warburg 1992). Soon after securing their rule over the Sudan, the Turkish overlords appropriated some

of the best land and administered it as estates for the production of seasonal crops (Adam 1987:19).

During the Turkish reign, resource capture took different forms in different regions. The eastern region witnessed direct “resource capture” for the establishment of an irrigation scheme, probably accompanied by the destruction of several forests. In the west, “resource capture” took the form of evacuations from lands as many tribes attempted to escape the cruelty of the Turkish colonisers. Indeed, this cruelty and the powers being acquired by groups allying themselves with the Turks led to significant changes in the cultural landscape, including a new notion of “open frontiers” to the south for escape and settlement by tribal groups from the northern ecological zones. As such, the terror of the Turkish regime enabled “resource capture” by groups allied to it. The lands of the Ja’aliyyin being taken by the Shayqiyah, as noted above, are an example of this.

The latitudinal east-west Sudanic belt axis was now exchanged for a longitudinal axis, from north to south along the River Nile, resulting in movements and concentrations of populations within the Nile Basin and in its immediate vicinity. The “open frontier” here refers not only to agricultural and pasture lands, but also includes other forms of trade, which gained momentum. During the Turkish era, another lucrative business started to flourish, that of gum arabic production, not only because its ‘tapping became common in response to growing demand’ (Stiansen 1998:65), but also because it enabled the natives to pay taxes.

#### 4.2.3 Resources accessibility under the Mahdist reign

The heavy influx of groups escaping the Turks from the downstream RZ into the NRZ, namely to Kordofan and Darfur, had led to resource scarcity in those regions. This created an objective impulse for out-migration, which was “subjectively” echoed and justified by the messianic religious notion of eastward *migration* of communities of the central Sudanic belt. The last two decades of the nineteenth century witnessed a counter-movement from the south-west (NRZ) involving supporters of Mahdism, which was probably the first large-scale movement of its kind in modern Sudanese history (details in Chapter 6). In other words, environmental degradation generated out-migration from the NRZ and targeted the opportunity niches in the central RZ under the guise of religion.

Under the reign of the Mahdist state, theoretically speaking, land ownership resided in religious codes by which all emerges from and is dealt out by God. The state is God’s custodian over the land and believers, and it was therefore only natural that the state should “nationalise” resources that had been “private” under the “unjust state of affairs”, which Mahidism came to correct. Under this banner, “resource capture” took place in earnest. Ownership of large tracts of cultivatable land was transferred from disloyal individuals and groups to loyal ones (Awad 1987:40). However, the basic structure of the system was not affected. If anything, the conflict that erupted during this time between the two main camps of

Mahdism, i.e. the *Awlād Al-Arab* and the *Awlād Al-Balad*<sup>1</sup>, was because of the contradiction then set between meagre resources and too many contestants ready to exploit them. Given the primitive means of production, a compromise between the *Awlād Al-Arab* and the *Awlād Al-Balad* was unlikely since the former were unprepared to relinquish the tracts of land they acquired in the downstream RZ and the latter were unhappy to see their “open frontier” diminishing. Some of the riverain groups were ousted from other regions. The fertile Gezira plains, which became an “open frontier” for the land-hungry arid RZ groups, was also taken over by members of the new Mahdist alliance (see Awad 1987).

However, as the changes under Mahdism were short-lived, the original owners regained their land after the regime collapsed (Awad 1987:40) and the system that had prevailed during the Turkish reign was restored. According to Adam (1987:23), a “feudal-patriarchal” mode of production characteristic of the agrarian structure of the “central districts” of the time’ prevailed until it was replaced by the capitalist mode of production introduced by the British.

#### 4.2.4 Resources under the British reign

The end of the nineteenth century and beginning of the twentieth century witnessed some dramatic changes regarding regulation of access to resources. The British publicised and maintained more rigorous regulations regarding land ownership throughout their reign. The British introduced what was considered a “land reform” by some scholars (e.g. Awad 1987, Adam 1987). According to Abbas Abdelkarim (1992:20), three main forms of land tenure existed in the Sudan by the time the British administration was set up in 1898. In the first, land was accessed by membership of a settled farming community. The second was private ownership within farming communities; and the third was communal ownership among pastoralists. Against this background, the initial years of the British occupation, witnessed ‘a number of land tenure reform measures’ (Adam 1987:23). The British administration passed in 1899 the Titles of Land Ordinance, set up a commission for land settlement, and acted against land-hungry speculators. In 1905, another proclamation subjected the transfer of land to stiffer controls (Gaitskell 1987:90-91, Babiker 1998:200, see Barnett and Abdelkarim 1991:6). In our understanding, these measures could be considered land reforms insofar as they halted the forces which might, otherwise, have generated large-scale land alienation. They ‘successfully stemmed the growth of an indigenous neo-feudalist class, prevented the dissolution of communal holdings and the appropriation of the land by the tribal chiefs, checked the expropriation of the small

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1. Literally, *Awlaad Al-Arab*, means the “sons of the Arabs” – the nomad Arab tribes from western Sudan, while *Awlaad Al-Balad* means the “sons of the homeland” to refer to riverain Sudanese. In reality, this doublet translates to commoners and people of the homeland, respectively. Arabs, confined to the first, is misleading; while it applies equally to both camps, the northern Sudanese (*Awlaad Al-balad*) claim it at the level of political discourse more than any other ‘Arabs’ in the Sudan.

freeholders by wealthy landowners, and arrested the alienation of land to Europeans' (Awad 1987:31). The outcome of this process was the registration of three forms of land ownership which still exist today: firstly, the individual ownership of land; secondly, government land subject to rights vested in a community; and, finally, government land subject to no community or private rights (Abdelkarim 1992:21, see also Awad 1987).

According to Awad (1987:50), the reforms introduced by the British re-installed the system that had prevailed for centuries before the Funj Sultanate. He adheres to a position that sees the re-installation of the old system as stemming from its original qualities rather than the measures *per se*. Awad (1987:50) states that 'this similarity between the structure of landownership which exists today and the one which existed several centuries ago is not due to stagnation in this aspect of economic life, but due to the fact that the changes which took place were self-correcting, rather, self-reinforcing'.

However, we have to note that either because of historical differences among Sudanese regions or because of the fact that 'the Condominium government was in full control of the country' (Awad 1987:49-50) land settlement had different impacts in different regions. This "full control", which Awad (1987:49) considers to be 'the only significant difference', is what constitutes a remarkable shift from the tenure system of the early days of the Funj. Significant to this shift is that few communities in the downstream RZ would obtain land rights and land security by legally registering their lands, as we shall see below, while the bulk of the population lost their rights to "ownership" of the rain-belt lands. These NRZ/upstream RZ groups retained only usufruct rights to what had once been theirs and was now owned by the state. 'In the central rain-belt areas of the Sudan where land is cultivated or grazed at irregular intervals, or is superabundant, there has been no land registration for individual ownership, and such areas were deemed to belong to the government' (Adam 1987:24, Abdelkarim 1992:20).

In the words of Adam (1987:23) the impact of the land-reform measures, composed of land settlement, registration, acquisition and land disposal, and the codification of the rights and duties of the Sudanese population, differed from one part of the country to another. Whether or not the land is cultivated defines its nature of tenure; therefore, 'in the Northern and Khartoum Provinces the *cultivated* land was recognised as privately owned and appropriate titles were issued. Here, the only land which became public domain was land lying too high or too far from the river to be commanded by the *sagia*' (Adam 1987:23, italics added). Moving southward from the arid RZ a different arrangement was put in place.

In the White Nile area, which later came under irrigation with construction of the Jebel Awlia dam and private concessions, only a small proportion of the land along the White Nile qualified for private ownership because of the way in which the people had moved back and forth in response to the changing level of the river – *the land*

*and the flood plain having been used mainly for grazing* (Adam 1987:23, italics added).

The rainfed land of the Gezira, which satisfied the criterion of continuous cultivation, was registered as being individually owned, while this right was not recognised for lands in places such as Tokar and the Gash Delta in eastern Sudan, and in *wadis* (seasonal streams) (Abdelkarim 1992:21).

A quick observation here is that land ownership is judged in connection to the river, i.e. the Nile, and specifically in connection to its cultivated banks and not in connection to eking out a livelihood as such. On the one hand, *land that was truly useless for farming communities*, i.e. land that could not be commanded by the *sagia*, was considered not worthy of allocating as private property. By contrast, those *lands useful for pastoralists were considered not to qualify for private ownership*. Certainly, flood plains are similarly important to pastoralists eking out a living. In short, the land settlement arrangements guaranteed security of tenure for farming communities in the downstream RZ and rendered insecure that of pastoralists and agro-pastoralists in the NRZ and upstream RZ. In this case, the pastoralists' lands, which are often flooded, were treated differently from flood plains lying along the main Nile (the arid RZ) which were recognised as privately owned. This divide continues to be the inherent logic behind land allocations until the present day. Its most important consequence is that it literally turned the Nile Valley into the property of riverain farming communities. As we shall see in Chapters 7 and 10 this ownership is protected by a multitude of procedures, both direct and indirect, reinforcing historical qualities that made the downstream RZ a "forbidden" area to encroach upon by outsiders.

The introduction of modern irrigation combined with recognised ownership rights being almost exclusively restricted to downstream RZ communities literally turned the river into the primary source of power. In fact, power is very much associated with the banks of the river; generally speaking, the closer you are to it, the more powerful you will be. Ownership of land takes centre stage – owners of land adjacent to the river are the more powerful, those who own lands next to this are less powerful and the weakest are those inhabitants of the furthest lands, towards the fringes of the desert. Such arrangements are influenced by a logic of who irrigates first and who irrigates next, or who gets enough water and who gets less or none (for relevant details see Steenwinkle 1986) and certainly by the cost of channelling water to areas far from the river, which additionally are not replenished with the fertilising river deposits.

We argue here that the British administration subjected resources in the Sudan to an inequitable arrangement, a split tenure system, which represents the root cause of future "resource capture" and "ecological marginalisation". In this manner, the British reinstated the notion of the "open frontier" either by constructing the "communal" or obstructing the normal evolution of accessibility and ownership of resources outside the downstream RZ. There is ample evidence

that private ownership of land in the NRZ already existed before the British reign, or that the system was evolving towards establishing private ownership, and the regulations enforced by the British halted this trend. One such piece of evidence, during the Turkish rule, is that though the state owned the whole territory it conquered, sometimes, at least implicitly, it observed private ownership of land on the NRZ plains. In connection with taxing and purchasing of gum arabic, presumably, ‘the government collected taxes from people working *privately-held land*’ (Stiansen 1998:77, italics added). The following extract makes it clear, however, that the Turkish administration accepted some private form of ownership of land within its proclaimed arrangements:

[I]n June 1843, when it reestablished certain monopolies that had been abolished in February of 1842, it argued for its lawful right to take possession of gum since it grew “naturally and without cultivation.” When pressed to give up remaining monopolies, the government refined its argument to claim ownership of unclaimed land (i.e. land without a recognised proprietor) and the produce of such land (Stiansen 1998:77).

Private ownership did exist, however, and it was the central government that transformed it into communal ownership. Mustafa Babiker (1998:199), studying the case of the Hamar tribe, showed how administrative convenience and cost-cutting measures during British colonialism led to ‘reinforcing tribal loyalties and supporting native authorities to the ... degree that these were even created where they could no longer be found’. Babiker went on to say that ‘one of the principal justifications for establishment of a system of “communal” land rights was that it would empower native authorities’, where the latter ‘would govern the rural population on behalf of colonial authorities’. Thus, contrary to the assertion of the “self-correcting” mechanism, espoused by Awad (1987), ‘it was the British who intervened to construct and maintain a new system of communal tenure’ (Kevane and Stiansen 1998:44). Instead of helping accelerate the evolution of land tenure systems in a positive direction, the British colonial administration halted this evolution or even reversed it. ‘In this system, land that had previously been controlled by influential and wealthy families was now considered to be held by them only “in trust” for their geographical neighbours, their “co-villagers”’ (Kevane and Stiansen 1998:44). The tenure regulations, in effect, protected land rights in certain zones, namely the downstream RZ, and left the rest of the country to be used as an “open frontier” for future speculators.

There were reasons for this discrimination. In order to generate revenue, the colonial administration paid great attention to increasing agricultural production. Instituting private ownership of land in the downstream RZ, the first area to be conquered and stabilised, through regulation and registration, was an essential exercise (for details see Shaaeldin 1987:4, Gaitskell 1987, Awad 1987). For communities in the downstream RZ, this was essentially a reversal of the Turkish and

Mahdist heritage of land insecurity; groups who caught on to this atmosphere of good will from the British when it was still fresh, made sure that they acquired this longed-for sense of security.

The growing assurance, after the reoccupation, of fair administration and reasonable taxation, and the government's own desire to *get cultivation going*, brought out of hiding all manner of claimants and set off a wave of disputes as to rights. Without secure title cultivation and reinstatement of water-wheels would naturally be discouraged and settlement was urgent (Gaitskell 1987:89, italics added; see also Gibbon 1918:7, Babiker 1998:200, Shazali 1988:189).

The way to fulfil the twin objectives of revitalising agriculture and rehabilitating the farming community, according to Awad (1987:48), 'was to follow a land policy which would induce the maximum number of people to settle down to cultivate the land with confidence. Hence the need to protect the freeholders from expropriation by foreign capitalists (and the tenants from exploitation by native landlords).' In relation to the rest of the land, state-owned territory was itself meant to serve the same interest of agricultural development; it was not an immediate task, however.

By refraining from registering the "superabundant" land in the rain-belt areas, 'the policy of the colonial government aiming at the encouragement of capitalist farming was realised through the disposal of government land, free from encumbrances, to private tractor owners on a leased basis' (Adam 1987:24). This protection of the freeholders' land as in contrast to leaving the communal land – now state-owned – as an "open frontier" for expansion would define the technologies of enrichment/ impoverishment and access to economic and political power and ultimately lead to the generation of water scarcity in the Sudan. The inability or unwillingness of British officials 'to recognise the contradiction in their policies of indirect rule and direct intervention led to instability and uncertainty rather than security of tenure' (Kevane and Stiansen 1998:44). The traditional land-tenure systems allowed the modern schemes to expand unrestrictedly, displacing and impoverishing the inhabitants of such lands in the process. Referring to the rapid expansion of pump schemes in the central RZ, Osman (1987:254) states, 'Suitable land has always been abundant and free from most of land tenure problems of the Northern Province.' Stabilisation in this period was urgent for a regime that was so frightened by Mahdism. Farmers represented the regime's political capital. Whereas the nomads had a history of allegiance to Mahdism and were hard to tame within a short period of time, farmers or those who aspired to be farmers, could be tamed, and so were courted by the colonial administration (Chapter 3). That is why immigrants from outside the Sudan were encouraged while natives (pastoralists and agro-pastoralists) were displaced from the Gezira and the White Nile areas (Chapter 6).

A contrast in this respect might also be valid. When it was not possible to find “farming” communities, they had to be brought in from elsewhere, as long as it was outside the political coalition. This implicit policy was effective in removing sources of potential disobedience or fuel for a possible Mahdist resurgence. The land-tenure reform measures coupled with ‘the conceptions of specific forms of economic organisation’, according to (Adam 1987:23), ‘have all contributed to the accelerated disintegration of the “feudal-patriarchal” mode of production’. It is likely that the British, realising the importance of land as a source of power, opted to diminish that aspect, by restricting its ownership to the recruits of the new power block (the conservative riverain farming communities) and “legally” capturing it from the troublesome pastoralists and untamed agro-pastoralists. This was the beginning of the process that would result in the creation of a new riverain elite in the Sudan (Chapter 3), which would be part of the power bloc with the British throughout their rule and which would inherit power from them. This appreciation of farming operated as a “sub-ideology”, which disguised non-farming activities even when they had better comparative advantages. This sub-ideology would continue to define post-independence land issues and largely determined the relationship between the RZ and NRZ. It took for granted the development of the former and with it the neglect of the latter.

Whereas land reforms had been part of the agenda of liberation movements in Africa, the Sudanese elite who led the independence movement did not bother themselves with reconsidering the British “land reforms”. According to Awad (1987:31), ‘the pattern of landownership in the Sudan has hardly changed during the last fifty years or so, and it seems that very few people regret the fact that this is the case’. For political reasons, ownership of a few tracts of land was reconsidered when the military government, which came to power in 1969, confiscated 40,000 *feddans* from the Mahdi family (Waterbury 1979:181). The Sudan in this regard stands in clear contrast to many Arab and African states that adhered to serious agendas of land reform (Awad 1987).

Thus, from the time when the British “land reforms” went into effect up until today, the state practically owned almost all the land in the country. Save for 6 million *feddans* that are privately owned, the total area of the Sudan of 596.6 million *feddans* is owned by the state (Awad 1987:39). Everything that was previously considered to be communally owned was now state land, with tribal or village communities having mere usufruct rights (Awad 1987:39). In the post-independence era, state ownership of land was further reinforced through the discourse of allocating it to private investors and the violence exerted by the state against those who resisted this *raison d'être*. Land-tenure reforms, in this respect, contributed to build the power bloc of twentieth-century Sudan. They reopened the *southern* frontier, “the savannah belt”, in a decisive manner to the land-hungry riverain elite. Thanks to the colonial and post-colonial administration’s encouragement and facilitation of *modern* irrigated farming, the irrigated farming group managed to accumulate capital and be the first to invest in further irrigated

agriculture as well as in the more lucrative rainfed, mechanised farming. According to O'Brien (1985:24), pump-irrigated agriculture served as the basis of initial capital accumulation in Sudanese agriculture during the colonial period.

*Expansion in modern agriculture: Large-scale resource capture*

Pump schemes were first introduced in the Sudan in 1905 and by 1909 they were present in an area of 2,580 *feddans* (Gaitskell 1987:105). The pump schemes expanded rapidly thereafter and following the establishment of the Gezira Scheme in 1925 they represented most of the expansion in irrigated lands. The gross area of pump schemes increased from 38,000 acres in 1925 to 180,000 acres in 1944. By 1956, this had increased to 625,000 acres. The number of pump-irrigated schemes for the latter figure reached 1,500 (Osman 1987:254, for more details see Abdelkarim 1992:142-3). Their increase continued so that 'up to the mid-1960s private pump schemes had been multiplying rapidly, reaching well over one million *feddans* in total area cultivated' (Abdelkarim 1992:22). Among the factors leading to this rapid expansion of pump schemes were the absence of land-tenure problems, availability of land and water for irrigation, availability of capital in the post-World War II period, the increase in cotton prices, and government's more liberal licensing and loan policies (Osman 1987:256). Two other structural factors, however, were essential for the emergence and expansion of the pump schemes, according to Abdelkarim (1992:23). One was 'the relative development of the process of primitive capital accumulation'. Inherent in this was 'the development of landless and semi-landless classes that had been prepared to accept entering into sharecropping arrangements as tenants'. The other was the rise of indigenous and foreign capitalists urging the state to acknowledge its "formal" land ownership and lease that land to them, whereupon they leased this land to tenants. These factors, of course were synergetic with the imperatives and strategic importance attached to the development of large-scale irrigation projects and mechanised farming.

The fact that irrigated lands in the downstream RZ were privately owned turned their owners into a forceful lobby, not only for acquiring a larger segment of the resources, but also for maintaining state subsidies and facilities provided by large-scale public works (detailed later). Abbas Abdelkarim (1992:23), along with Taisir M.A. Ali and El-Fatih Shaaeldin, states that 'the colonial government was interested in establishing an economically powerful class ally. This ally came to power in the post-colonial period and its interests have been fully protected by post-colonial governments.' It turned into a powerful lobby, which by benefiting from irrigated agriculture could be awarded subsidies from the state and influence the state in order to acquire more land, both irrigated and rainfed. In the following section, we shall look at the role of this ally – the forceful lobby of riverain agricultural capitalists in carrying out large-scale "resource capture" and

causing large-scale “ecological marginalisation”, environmental degradation and conflict over resources.

#### 4.2.5 Development discourse and the predatory post-independence state: Entrenching the lobby of agricultural capitalists

This section elaborates on the expansion of modern agricultural projects, both irrigated and rain-fed from 1956 up until the present day. Its aim is to reveal the process which affected the water partition.

##### *Expansion in irrigated agriculture*

The period following independence witnessed a dramatic increase in the number of pump schemes and the amounts of land devoted to them. In 1965, land under cultivation involving pump schemes reached 1.2 million *feddans* (Abdelkarim 1992:143). In the late 1970s, the area under pump irrigation was estimated at 1.5 million *feddans*, representing about 34 per cent of the total irrigated land and about 8 per cent of total cultivated land in the country (Abdelkarim 1992:17). A marginal “resource capture” by some powerful farmers may have occurred.

Unlike pump schemes, which were largely built on privately owned lands, large-scale gravity irrigation caused direct large-scale resource capture and ecological marginalisation. As noted in Chapter 3, in the 1920s, the British created the largest cotton projects in the world, i.e. the Gezira Scheme. Land ownership was regulated through the Gezira Land Ordinance of 1921 (Adam 1987:23). According to Shaaeldin (1986:166), ‘although the right of ownership was legally safeguarded, the government forced the owners to lease the land for a fixed rent that would not be increased. In compensation, tenancies were allotted to landowners and their nominees’ (see also Adam 1987:23, Shaaeldin 1987, Gaitskell 1987). In the same decade, similar to the Gezira Scheme, the Kassala Cotton Company initiated the Gash Scheme in 1926, for which it acquired 250,000 *feddans* for the production of cotton (Abdel Ati 1996:62), taken from the communal lands of the Hadendawa people. A decade later, a large water construction project, the Jebel Awlia Dam, was completed to regulate water for Egypt. Large areas, whole communities’ lands and vital resources, were thus captured by the state to maintain the dear colonial desire, i.e. “to get cultivation going” – not to get pastoralism flourishing or harmonise it with cultivation. The result was the displacement of large pastoralist communities from their habitats (Chapter 6).

The period following independence witnessed enormous resource capture for expanding large-scale agriculture, effectively putting a larger part of the area between the Blue Nile and White Nile under cultivation and expanding even further by the end of the 1970s. In 1962, a large extension of the Gezira Scheme (the Managil South-Western Extension) with an area of some 800,000 *feddans* more than doubled the irrigated area of the Gezira for cultivating extra-long staple cotton (Shaw 1987:137, see Davies 1984:133). This made the Gezira the largest project

of its kind in the world. In this scheme, as we noted in Chapter 3, the irrigated area cultivated to cotton was larger than that allocated to all other crops. The 1960s witnessed the establishment of the Khashm Al-Girba and Guneid agricultural schemes and the enormous increase in pump schemes continued to replace traditional irrigation systems (Davies 1984:133).

Associated with the establishment of the Khashm Al-Girba Scheme with its area of 390,000 *feddans* (Abdelkarim 1992:31) was the capturing of whole Nubian communities' resources and their forced resettlement for the sake of constructing Egypt's High Dam (see Waterbury 2002:136) as part of a deal between the governments of Egypt and the Sudan. Lake Nuba, behind the High Dam, stretching 150 kilometres inside the Sudan's border (Chapter 1), had submerged a cluster of villages along the banks of the Nile, displacing more than 15,000 people (McCully 1996).

The 1970s had yet to witness an enormous assault on land used by traditional farmers and pastoralists. According to Holt and Daly (1979:211), 'A tradition of huge development projects, begun with the Gezira Scheme and involving similar promises and risks, has continued. Three projects have attracted special attention, and serve to illustrate the ambitious character of the recent plans and the mixed results these achieved' (see Davies 1984:133). These three projects are the Rahad Scheme, the Kenana Sugarcane Scheme, and the Jonglei Canal (Holt and Daly 1979:211, see Davies 1984:133). The Rahad Scheme, stretching into three provinces, expanded the area under cultivation by 125,000 hectares, irrigated by water pumped along a 50-mile canal from the Blue Nile to the Rahad River (Holt and Daly 1979:211, Davies 1984:133, 1985). In the 1970s, embracing an enthusiastic development discourse, the May regime established what has been described as 'the mammoth Kenana project', which is believed to be 'the world's largest sugar plantation' (Holt and Daly 1979:211, see Davies 1985). The third project, the Jonglei Canal is also gigantic with 267 kilometres completed of its 360 kilometre total length (Laki 1998:292, Sa'oudi 2001). Except for 200,000 acres planned to be irrigated in southern Sudan, as conceived of in the initial plan (Holt and Daly 1979:212), the Jonglei Canal might not in fact cause a direct "resource capture". However, it acts as a barrier to herd movements, causing an incalculable loss of wildlife and resources formerly utilised by southern Sudanese herdsman.

In the early 1980s, the area cultivated with pump schemes (private, cooperative, and government schemes) and large government schemes extended over an area of 4.25 million *feddans* (Abdelkarim 1992:31). Large-scale irrigated agriculture is expected to expand even further, as the National Comprehensive Strategy of the current regime has emphasised it (Ibrahim 1996:269-70) and the government is facilitating its expansion in connection to its food security discourse (Chapter 8). Irrigated agriculture, including gravity-, pump-, flush-, and bore-well irrigation, has claimed an estimated 4.89 million *feddans* in less than a century (HCENR 2003:11).

The most recent niche for irrigated agriculture expansion, therefore, for resource capture is the northern region, where the government is constructing a number of new dams. This region, which was left almost untouched by resource capture after the dislocation of its Nubian communities in the 1960s is now again in the limelight thanks to measures that are probably even more aggressive. This is in association with another mammoth project – the Hamdab/Merowe Dam (hereafter the Merowe), which was approved in April 1998. The dam, originally proposed by the British in the early twentieth century, is now being constructed on the Fourth Cataract of the Nile, some 350 kilometres downstream of Khartoum and is due for completion by 2007. It will be 65 metres in height, 9.2 kilometres in length and will create a reservoir approximately 170 kilometres in length and 4 kilometres in width (Askouri 2004b:56). This length of reservoir will certainly be at the expense of many small farms whose owners are yet again confronted with the same elite serving the interests of the agricultural lobby, in addition to a new segment with an interest in hydropower. The Merowe Dam project, according to Askouri (2004b:57), ‘was proposed, designed and implemented by an influential group within Sudan’s autocratic military government who are promoting the privatisation of the country’s electricity sector’. The scale of resource capture in the northern region could be immense given that the Merowe Dam is only one of some seven other dams which cost about US \$2 billion. These include the Sabaloaga Dam at the Sixth Cataract and Al-Shreik Dam at the Fifth Cataract (for details see Waterbury 2002:136) and the Kajbar Dam further to the north, at the Second Cataract (*Sudan Tribune* 17 July 2004)

*Expansion of mechanised farming and the large-scale resource capture of NRZ lands*

While expansion in irrigated agriculture stagnated between 1980 and the mid-1990s (Table 11:11), another tremendous aspect of land expropriation was going on: the expansion of the area cultivated through mechanised farming. However, before we look at this expansion in detail, it is worth noting here that this very expansion was influenced by strategic concerns that go beyond Sudan’s own borders and options. Mechanised farming was originally necessitated by the strategic requirements of the British troops during World War II (Ahmed and El-Batthani 1995:195) and it acquired momentum in association with meeting geopolitical interests of the oil-producing states, primarily Saudi Arabia (see Barnett 1988:4). In its incredible expansion, and with regard to actors involved, mechanised farming appears to be a strategy to tap what were considered “alternative sources of water” available to Sudan, i.e. rainwater, as noted in Chapter 1, so as not to reduce the water flowing to Egypt. The capital accumulated from both pump and gravity irrigated agriculture, together with capital from Arab oil-producing countries, driven by their food security concerns since the early 1970s, could have led to an enormous expansion in irrigated agriculture. However, Egypt’s influence prevented both of these potential investors from engaging in ir-

rigation. It is the “open frontier” for expansion that was then paved not only for Sudanese *jellaba* and Arab investors (Chapter 5), but for Egypt itself to engage in mechanised farming in the Sudan (Chapter 9).

In order to develop mechanised rainfed agriculture, now facilitated by state ownership of land, millions of hectares were acquired, all coercively captured from pastoralists and traditional farmers. ‘Since the 1940s, Sudan has adopted the use of coercion as a legitimate measure to evict traditional cultivators and pastoralists from their farms, animal routes, grazing lands and water points in favour of the expansion of large-scale mechanised farms’ (Mohamed Salih 1999:59, see also Ahmed 1994:58). Mechanised farming became an increasingly lucrative business for the downstream RZ elite, and under dictatorships it was used to consolidate fragile political alliances. Invoked by a “frontier-cast ideology”, the proponents of large-scale mechanised farming may have developed a moral justification for large-scale resource capture that produces (food) surplus.

According to Mohamed Salih (1999:58) in 1945, large-scale mechanised schemes were introduced in the area of Gedarif and began to proliferate in the country at the expense of traditional farmers and pastoralists from whom large areas of land were appropriated (see also Abdelkarim 1992:61, 69). The private sector became involved in 1953 due to the shortage of public finance (Mohamed Salih 1987:111), but also due to the power that the lobby of riverain agricultural capitalists had by now acquired. The reliance of this lobby on the state and its influence on state actions would be decisive in causing ecological marginalisation; however, this was owing to the existence of discriminatory tenure regulations.

The rising national capital pulled the “land-owner” (the state) in two directions. First, to realise its “ownership” of parts of land (which were at that time only its property on paper) by expropriating them from their original “users” (in the government thinking) or “owners” (in [the] people[‘s] thinking). Second, to lease the land to capitalist producers (Abdelkarim 1992:23).

The lobby not only won the bet and expanded its sphere aggressively; in fact, it used the state’s money for its own purposes – its ‘capital-intensive commercial farming sector... owes its existence and profitability to state intervention and subsidies’ (Ahmed 1993 :118, see also O’Brien 1985, Ahmed and El-Battahani 1996, Suliman 2000:125).

Thus, by the beginning of the 1960s the area under mechanised farming had leapt to 507,000 hectares (Suliman 2000:124-5). In the first season, i.e. in 1944/45 an area of approximately 300,000 *feddans* was earmarked for cultivation (Abdelkarim 1992:61). In fact, the late 1960s witnessed the expansion of mechanised farming to other areas, where the government started leasing land to the private sector in 1968 in the Blue Nile, Kassala, Southern Kordofan, and Upper Nile provinces (Mohamed Salih 1987:111, Abdelkarim 1992:57). By the 1970s, the area under this sector accounted, at least, for 2.2 million hectares (O’Brien

1985:27) and by 1986 it reached 5 million hectares (Suliman 2000:123). Most likely, this was just the licensed schemes' area. In fact, in 1982/83, according to Barnett and Abdelkarim (1991:14), mechanised farming extended to over 29 per cent of the total cultivated land area in the Sudan. In 1989, according to Suliman (2000:131), the area cultivated under mechanised farming reached 8 million hectares with an equivalent size of unlicensed area cultivated in the same manner (for further details see Ali 1988).

The end of the 1980s seemed to herald yet more dramatic expansion in mechanised farming. Beginning in 1989, 60 per cent of the land in the Rahad Dam area was cultivated by arbitrary (outside the plan) mechanised farming (Suliman 2000). This type of agriculture continued to spread year after year until it reached the flood plains to the south and to Sudan's border with Central African Republic to the west (Suliman 2000:125). Another, more dramatic leap in the expansion of the areas allocated to mechanised farming followed the issuing of the Investment Act, which was amended in 1991 and 2000. This law, according to Suliman (2000:132-3), for the first time turned land into a commodity for investment, where by mid-1993 17 million hectares were prepared for investors and 3,000 applications submitted for agricultural investment.

The conscious state policy of strengthening its allies resulted in the latter acquiring immense tracts of lands. This contributed to incredible social inequalities and power imbalances. The striking thing about mechanised farming was that it acquired such a huge area of cultivable land, equivalent to double the area of all smallholdings of Sudanese farmers while being licensed to just a handful of absentee farmers. According to Suliman (2000:137), mechanised farming areas stand at more than 7 million hectares licensed to 8,000 families, while 4 million poor farmers depend on 4 million hectares of land cultivated by traditional rainfed techniques. Abdelkarim (1992:69) points out that of the total land cultivated in the Gedarif region in 1982/83 season, roughly 70 per cent was cultivated by "large farmers". Among the latter, however, a category of "super-large" farmers cultivating over 10,000 *feddans* each, according to Abdelkarim (1992:75-6), acquired 2.9 million *feddans* – just under a fifth (19.3%) of the total land under cultivation. The agricultural lobby here involves some of the most influential figures in the country. Large farmers whose social origins can be traced to the state's bureaucracy, such as former military officers and teachers as well as businesspersons and farmers from outside of the region (from northern, central and eastern regions) depended mainly on loans from the state-owned Sudan Agricultural Bank and the Mechanised Farming Corporation (Abdelkarim 1992:68, see also Mohamed Salih 1987:111-12).

On the other hand, poor farmers were prohibited from seeking cultivable niches. Associated with this resource capture are the spatial limitations set by the state in connection with the irrigated areas (Chapter 8) and the wetter lands in the savannah belt. Regarding the latter, Mohamed Salih (1999:59) states,

A clear example of state oppression occurred when millions of victims of the 1983/85 drought and famine began to search for possible survival alternatives, by moving into fertile lands. The state authority staunchly opposed this spontaneous movement into the wetter zone and into some of the areas which had been demarcated for the future expansion of large-scale private mechanised farms.

The government used the army to fend off these people and to return them to where they came from (Suliman 2000:146, Mohamed Salih 1999:59). This adds one more aspect to the complexity of the process of ecological marginalisation. Below we shall look at this ecological marginalisation in more detail, focusing on its magnitude, impact, and causes.

### **4.3 Ecological marginalisation: Reducing the “supply” of “green water”**

Our concern in this section is to highlight what is going on in the various ecological zones, in particular, the desert – one of the four components of life in the Nile Valley – and in other drylands and wetlands which lie partly within the RZ and partly in the NRZ. A premise followed here is that the Sudanese communities in different ecological zones developed codes of behaviour in indigenous knowledge, which yielded a sustainable management of natural resources (for details see El Moghraby 2003:27, Umbadda 1981:107, Shaaeldin 1981:97). Accelerating environmental degradation, as manifest in the increasing rate of desertification, deforestation, concurrent droughts, chronic food shortages and famines, and aggravated conflicts, was the natural outcome of authoritarian development policies. We shall treat this as essentially a cause of changes in water partitioning, impelled by changes in land use, particularly in combination with large-scale irrigation and mechanised farming. We argue here that the “supply” of “green water” (read “the maximum use of rains”) is decreasing because the rainfed niches are increasingly degraded or made instable by authoritarian development policies. This section discusses some aspects of environmental degradation, namely those generated by “resource capture” and “ecological marginalisation”.

#### **4.3.1 Magnitude of environmental degradation**

In terms of environmental degradation, the Sudan is facing the threat of total collapse of its ecosystems. Desertification and concurrent droughts have become phenomenal, though they have been the subject of debate for quite some time now. There is near consensus among scholars that the most serious environmental problem in the Sudan is centred on drought and desertification (El Moghraby 2003:33, Hassan 2002:15). ‘All other signs of environmental degradation, such as soil degradation, challenges of biodiversity, climatic changes etc are highly related to drought and desertification’ (Hassan 2002:15). It is noteworthy here that

the problem of water scarcity at the 1992 UNCED in Rio was addressed under the concept of “drought and desertification” (Falkenmark 1997:30, see Okidi 1997:167).

The desertification process has generated the perception among researchers and policy-makers that the desert is moving southwards and with greater speed. Eckholm (cited in Helldén 1988:9) claims,

[T]he desert’s edge is gradually shifting southward there is little doubt. The spread of the Sahara has probably been measured most precisely in Sudan. There, as elsewhere, vegetational zones are shifting southward as a result of overgrazing, woodcutting and accelerated soil erosion. Steppe loses ground to the desert, it creeps into the neighbouring savanna which, in turn, creeps into the forest.

Since around 1965, annual demand for wood has outpaced supplies and the forest has contracted by a fifth (Whitaker 1988:140, see Abdel Nur 1991). The desert moves southwards about six kilometres every year with Northern Kordofan and Northern Darfur the most severely affected (Umbadda 1981:105). H.F. Lamprey in 1975 presented an alarming picture of desertification in *Report on the Desert Encroachment Reconnaissance in Northern Sudan*. Lamprey (cited in Helldén 1988:8) states, ‘It is evident that the desert’s southern boundary has shifted south by an average of about 90-100 km in the last 17 years’. This mid-1970s account indicates that on average the desert has expanded by about 6 km annually. According to Lamprey, the southward movements of mobile dunes ‘are becoming an increasingly serious threat to the agricultural land and several villages in the Bashiri and Bara areas of the Kheiran region. The sand dunes are being augmented by the very large area of drifting sand further north near Hamrat El Wuz’ (Helldén 1988:8). The three areas mentioned here lie in the sandy region of northern Kordofan and are losing their vegetation rapidly.

Hassan (2002:6), provides a more recent account of the ‘advancing desert’ in relation to wind erosion. He notes that ‘sand is moving south of latitude 16 N at an encroachment rate estimated [at] 5 km/year’. However, some other sources show that the speed of desertification has increased in recent years as the vegetation cover in some areas is becoming increasingly thin and deforestation is claiming almost all of the forests. The rate of desertification has been estimated at about 10 kilometres per year (O’Brien 1985:27).

Ulf Helldén (1988:11), reviewing research contributions on desertification in Northern Kordofan, disagrees with the thesis of desert encroachment. He notes that although drought did severely impact crop yield during 1964-74, there was no creation of long-lasting desert-like conditions from 1962 to 1979 in the area of the magnitude described by many researchers. In fact, what seemed to be the desert encroaching south is in reality the creation of localised deserts on the southern fringes of the Sahara through the claiming of shrub and forest lands. This is detailed below.

Table 4.2: Rates of forest depletion in the Sudan

Years	Forest cover as % of the total area	% 1956 as of the base year	Average annual change*
1956	36	100	
1990	19	53	0.50
1998	12	33	0.87

Source: Kamil Ibrahim Hassan 2002:10; \* author's calculations.

Large tracts of lands are giving way to desertification largely due to human intervention. Hassan (2002:10) points out that the Sudan is one of the 14 countries with rapidly depleting forest resources, noting, along with El Sidding, that an estimated 0.5 million hectares of forest in the country are cleared annually (see also El Moghraby 2003). Eisa Abdelgalil (2000:43) notes that deforestation in the Sudan, at an annual average rate of 1.1 per cent during 1981-90, is significantly higher than that of two of its neighbours (Ethiopia and Kenya) with their average deforestation rates of 0.3 and 0.6 per cent, respectively. 'If we consider 1956, the independence year, as the base year, the rate of annual depletion is 1.6%. Accordingly, if we assume the same rate to continue, then in nearly 21 years, the Sudan will lose all its forests.' (Hassan 2002:10, see Abdelgalil 2000:43-4). As Table 4.2 suggests, within the 42 years starting in 1956, forest cover decreased to a mere third of what it had been with even faster depletion in recent years.

This creation of localised deserts was the result of territorialisation, expansion of cash-crop area at the expense of pasturelands and seasonal herd passages, and state policies' squeezing of traditional farmers at home. Negligence and failure to use underground water for enhancing productivity of farms and for rehabilitating the vegetation zone also played an important role in localised desert creation.

### 4.3.2 Impact of desertification

Despite the fact that no certain conclusion can be reached, the impacts attest that there is a serious environmental problem occurring on the fringes of the desert. Whether it is the desert moving south or regions adjacent to the desert experiencing localised desertification is something that has merited debate in the last three decades.

Especially relevant for this research, desertification disturbs population distributions by unleashing mass displacements, in our case, from the NRZ to the RZ. Localised displacement also causes conflicts. The moving dunes are becoming a serious threat to resources and to the peopling of large regions south of the Sahara. One severe effect of the described desertification is the decline in food and meat production. 'Food production has declined and continues to decline because of soil deterioration associated with desert encroachment and because of loss of land, especially land buried by sand' (Helldén 1988:8). Areas where economic activity is maintained through irrigation of gardens, rainfed agriculture and animal husbandry, such as the oases in Bara District, North Kordofan, are 'today

threatened by moving sands dunes that virtually bury the oases' (Haaland 1980:21). Abdelgalil (2000:43) points out, 'Land degradation is a serious problem that affects more than 60% of the country and manifests itself in declining land productivity.' The latter, in his view, led to severe food shortages and famines in the 1970s, 1980s, and 1990s, resulting in large-scale population displacement, which generated far-reaching effects for social and economic structures (for details see Hassan 2002:15-6).

The above processes have led to the collapse of the desert ecosystem and economic activities therein (Chapter 5) and induced significant rates of sedentarisation and migration, by nomadic groups in particular (Chapter 7). Below we shall investigate the real causes behind desertification and its consequences, which have led to food insecurity in the Sudan.

### 4.3.3 Tracing the causes of environmental degradation

The process of desertification in the Sudan went on for quite some time before anyone recognised its real causes. It had been attributed to natural shifts in rain and wind patterns. Being crossed by the Sahel zone, Sudan is particularly vulnerable to desertification. According to Ibrahim (in de Jong-Boon 1990:356), 'Main causes for the desertification of the Sahel are overcultivation, overgrazing, and excessive clearing of forests, which leads to their destruction. Man uses the land without [regard for] the relatively small potential of this tropical region.' In his view, the Sahel zone is in fact overpopulated, though its average population density is less than 10 inhabitants per square kilometre. This he attributes to two factors. The first is that the population is concentrated in regions where the supply of drinking water is secured, and the second is that soil productivity is low. In Ibrahim's view, the destruction of the yield capacity of the soil inherent in population concentrations around watering places was further accelerated by the settling of nomads after the beginning of the twentieth century (see also Ahmed 1987:138) (Chapter 7). Sharing these concerns, Mohamed Salih (1999:58) notes that the national stock herd in the Sudan is concentrated on less than 30 per cent of the total grazing lands in the country. The degree of herd concentration is exemplified by the expansive territories of Kordofan and Darfur, which are dotted with only 827 wateryards (Table 3.2) and 439 *hafirs* (Table 3.1), especially given that the latter are located in clay areas only. In other words, it was the result of ill-planned and biased policies of rural water supply.

State policies for increasing rural water supply (Chapter 3) contributed significantly to deforestation. Soil compacting and deforestation became serious around water points, especially following the "anti-thirst campaign" in the 1960s. Sand dune movement helped accelerate the rates of desertification (El Moghraby 2003:31). The situation was exacerbated by the fact that 'no management unit or ethnic groups in a given area can strike an optimal balance between pasture resources and number of animals. The concentrated distribution of water sources

has been a very important factor leading to over grazing' (Ahmed 1987:138). In this respect, we may argue that the state's strategy of incorporating western Sudan by augmenting rural water (Chapter 3) contributed to environmental perturbations; precisely, because it stopped short of accomplishing an adequately distributed rural water supply.

Besides the above "apparent" factors, a cluster of other factors has certainly contributed to the processes leading to desertification and concurrent droughts. These factors also need to be "dug out" in order to show the increasing complexity and degree of perturbation of ecosystems. Deforestation, which is considered the most prominent factor exacerbating desertification (de Jong-Boon 1990:335), has causes other than the cutting of trees for enclosures, charcoal, and the construction of houses.

#### *Historical, political, and administrative reasons behind desertification*

While most writings see environmental degradation mainly as a recent phenomenon in the Sudan, in fact it dates back to the first regime of controlling the Nile – the advent of the Turks' rule. Deforestation during this period operated largely in connection with political and military arrangements rather than for economic reasons. Seated in the open RZ, the Turks, like current governments of the Sudan, looked to the forests suspiciously and this was perhaps their reason for destroying large wooded tracts. An incident which occurred in the 1840s illustrates this. According to Nasr (1979:34), there was a large forest in the Taka region into which the Taka inhabitants used to drain extra water through several channels from the River Gash. This forest, Nasr says, was infested by thieves and highwaymen and for this reason the Turkish governor Ahmed Pasha Abu Wadan ordered that the forest be cut down and a garrison headquarters for the army constructed in its place (Nasr 1979:34). Presumably, forest pockets inhabited by groups under the threat of enslavement must also have undergone environmental degradation. We can equally expect deforestation caused by the pillaging of timber (Goldsmith *et al.* 2002:189) and charcoal for the "mother country", i.e. Egypt, especially from woodlands between the Red Sea and the River Nile. Back in 1822, Burckhardt noted, 'the surrounding mountains are very well wooded, and the Ababde Arabs burn there a large quantity of charcoal from the acacia trees, which they carry to the Nile, from whence it is shipped by merchants to Cairo' (cited in Pierce 2001:154).

However, most importantly, especially in connection with deforestation in the Sudan was the influx of hundreds of thousands of people fleeing the cruelties of the Turks into other environments, particularly the NRZ. Due to its abrupt nature and duration (between 1820 and 1885), this influx certainly caused deforestation and soil erosion in recipient regions due to construction of new buildings, over-grazing, and over-cultivation. This is particularly so given the size of the population on the move, which according to estimates may have been on the or-

der of about 4 million people (Chapter 6). The agricultural lands abandoned by escaping groups were most likely buried by the moving sands and subjected to wind erosion. Thus, the trends of voluntary population movement out of the Nile Valley that commenced during Funj rule were now simply being reinforced through coercive measures. As we shall see in Chapter 6, large numbers of people moved into Kordofan (one of the most environmentally degraded regions today) as well as to other regions. The central RZ-seated centralised governments repelled some of these groups, while some others made use of the pressure of these centralised governments and ventured into new frontiers. Probably, it was the tribal scramble for Kordofan that earned it the saying “*Kurdufan al-gharra um kheiran barra*” (“Kordofan the welcoming, the home of open-handedness”),<sup>2</sup> indicating its then bountiful resources at the disposal of every scrambling tribe. This very saying seems to illustrate how the abundant resources of Kordofan were at the disposal of every opportunist tribe – a feature that Kordofan is now almost completely stripped of. Being the “no man’s land”,<sup>3</sup> or more accurately, the “open frontier”, Kordofan was the opportunity niche for many tribal groups aspiring to fertile land. It also hosted dissident groups who first came to avoid the payment of tributes imposed by kingdoms in the Sudanic belt and from the 1820s onwards those who were on flight from the terror of the Turkish rule.

Apparently, the measures adopted for controlling the Nile contributed, to different degrees, to desertification. A century and a half later, desertification has added significantly to scarcity in the Nile by pushing large numbers of people to irrigated and urban areas on the banks of the Nile (Chapter 8).

#### *Territoriality and restricting movements of population groups*

Significant to the second and third regimes of controlling the Nile were their rigorous spatial regulations (land registration and the divide into private and state-owned lands) and its administrative and territorial arrangements (native administration or indirect rule), which put some limitations on the flexibility of localised population movements. What makes this striking is that such rescaling colonial regulations succeeded in curbing the evolution of indigenous systems, which had guaranteed some sustainable use of resources among communities. According to Mustafa Babikir (1998:199),

The success of Indirect Rule depended on a system in which political allegiance to local authorities was a condition for access to land. Equally important was carefully

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2. Although Kevane and Stiansen (1998:44) put it as ‘Kordofan the beautiful the source of goodness’, in essence this Kordofani proverb could translate to “Kordofan the welcoming, the home of open-handedness”.
  3. Between the close of the seventeenth century and 1785, Kordofan was either a base from which Musabba’at sultans attempted to seize power in Darfur or a theatre for contestants – the Musabba’at and the kings of Sennar (for further details see Spaulding 1998:53-5).

supervised delegation of authority, since it was presumed that indiscriminate sale of tribal lands by chiefs would disrupt native policy. To that end, colonial governments insisted that each native land was to be an “estate of the community” whereby each occupier of land was to be a “tenant of the tribe”.

The resulting unequal development and environmental degradation were direct outcomes of a contradiction between the continuation of pre-capitalist relations of production manifest in the tribal authority arrangements and the apparent changes in land use, wherein the latter represented the paramount means of production. The increasing sedentarisation of nomadic groups, partly influenced by enactments of native administration, and government villagisation policies (Chapter 7), especially in association with increased farming for cash crops, became a major cause of environmental degradation. For instance, in the Dar Hamar zone in western Kordofan, the area cultivated with groundnut, sesame, and other crops is an irregular east-west extended strip, blocked the flexible seasonal south-north movement of pastoralists. This contributed greatly to the degradation of rangelands to its northern side as more herds remain all year around in the same place. Territorial restrictions would later be seen in the government prohibition of pastoralist and traditional farmers from venturing into the downstream RZ (Chapter 8) and the wetter zones, as mentioned earlier.

#### *Modern forms of resource capture and ecological marginalisation*

In the early decades of the twentieth century, environmental degradation would become apparent and significant in an aggressive process of ecological marginalisation caused by the economic use of Nile water within a policy framework favouring agricultural export (for details on the latter see Beshai 1976, Adam 1987). We earlier portrayed the immense size of the land “captured” by the state for large-scale irrigated agriculture, which led large groups to lose their lands to the development of the River Nile. The impact of these earlier projects is probably larger than we have conceived of so far.

The groups which were pushed out of the Gezira area, starting since early 1920s (Chapter 6) replicated the expulsion experienced during the period between the 1820s and 1840s. Other groups lost their lands to the engineering of the rivers with medium- and long-term impacts. One such impact is the loss of grazing and farming lands caused by the building of the Jebel Awlia Dam in the 1930s. According to Khogali (1986), the raising of the water level associated with the construction of this dam, ‘meant that extensive areas of riverain land as far south as Jebelein, over 320 km south of Khartoum, are annually inundated from July until April instead of from July until November’. The consequence of this, in his view, was the loss of riverain land, which was formerly available for cultivation and grazing between November and April as well as some pockets of higher land which were used as camp sites and for grazing (Khogali 1986). Regular earth embankments along the White Nile necessitated by the construction of Jebel

Awlia Dam (MOCI 1998:131) certainly deprived pastoralists and farmers of the waters that spilled into the neighbourhood annually, nurturing a variety of grasses and small farms. Many if not all of the ponds or small “lakes”<sup>4</sup> such as *Buhairat Atteira Al-Khadraa*<sup>5</sup> (the Green Bird Lake), which existed before the dam, have dried up.

These effects probably caused the large-scale movement of nomadic groups into Kordofan to the west. The aftermath of the British invasion would see some significant changes with regard to the nomadic mode of production. During this period, it became possible for nomadic groups from the arid part of the White Nile ‘to go as far as the gizu [in further northern Kordofan], something that would have been impossible during the Fung Kingdom or Mahdiya times’ (Khogali 1986). The shrink of the grazing lands due to the construction of the Jebel Awlia Dam was crucial to these changes necessitated frequent movements out of the lands adjacent to the river and into Kordofan (for details see Khogali 1986). The ecosystem of Kordofan was thereby put under pressure by groups originally dwelling in the White Nile’s RZ.

Another typical example of the above processes was the abrupt resource capture and ecological marginalisation of the Hadendawa pastoralists, caused first by the development of non-Nilotic rivers and later by the development of the Nile system. In 1926, when the Hadendawa pastoralists arrived at the River Gash delta earlier than usual, ‘because of drought and poor grazing in the hills, [they] found their pastures diminished, their well centers surrounded by *cotton* and a large proportion of West Africans in control’ (Egeimi 1996:41, italics added). The communal land of the Hadendawa was captured and leased to Kassala Cotton Company, where the latter had initiated the Gash Scheme in 1926 and claimed over 250,000 *feddans* (Abdel Ati 1996:62) for producing cotton. Land in the Gash Scheme was originally distributed to the Beja, mainly Hadendawa, but the latter group’s preference for livestock herding as well as low output prompted the company to allocate plots to West-African migrants (*Fallata*) (Abdel Ati 1996:62). The Hadendawa lost their grazing lands to the company abruptly; though they lost their land to groups alien to their area more gradually. The company’s prompt need for immediate revenue was considered more important than justice for the local community. The Hadendawa underwent ecological marginalisation, which is manifest in the contraction of the geographical space for operation of their pastoral economy and the curtailment of their traditional movement, which is their main defence against drought and the mechanism

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4. It is interesting to note that, in 1875, Braut Pasha, the head of the exploration expedition to the area between Omdurman and El Obeid, on his way to the latter pointed out that he met some lakes and mentioned by name *Buhairat Atteira Al-Khadraa* (the Green Bird Lake) (Nasr 1979:59). Another lake – two kilometres long and one kilometre wide – was found to the south of the Green Bird Lake. Braut saw that the existence of water in this lake is due to its direct spill from the Nile during flood time (Nasr 1979:59).

5. The Green Bird Lake lies off the shore of the White Nile not far from Khartoum (Nasr 1979:59).

which traditionally maintained the balance between people and resources (Egeimi 1996:41-2, see also Abdel Ati 1996, Morton 1993:35-6).

Before they could adjust to the new situation, the Hadendawa had to undergo another assault on their resources and yet further ecological marginalisation. The mid-1960s witnessed the spectacular loss of land to Nile engineering. The displacement of the Nubian communities by Egypt's High Dam lake to the Atbara Basin, 'perhaps one of the greatest dislocations and relocation in the history of the Basin' (Mageed 1981:76), marked this era. The damming of the river Atbara for the irrigation of the New Halfa agricultural scheme for resettlement of the Nubian communities reinforced the Hadendawa's geographical marginalisation as it caused a decline in the amount of water downstream and a reduction in the grazing space available (Egeimi 1996:62). Neighbouring tribes also lost parts of their traditional grazing lands, and now the Hadendawa and others are competing for shrinking pastures along the fringes of what had once been their expansive tribal lands.

The state seems not to learn any new lessons from the negative impacts of its large-scale development projects; it has continued its authoritarian development policies, especially in connection to the Jonglei Canal and, later in the 1990s, the Meroe Dam. The most controversial ecological marginalisation caused by the engineering of the Nile revolves around the Jonglei Canal project, located in the upstream RZ. The Jonglei Canal, with its lengthy extension – not yet completed, as noted earlier – affected pastoralists in a manner similar to the effect of land captures for large-scale agriculture in central, eastern, and western Sudan.

The completion of the Jonglei Canal may aggravate "ecological marginalisation" as it results in the contraction of the flood plain. The canal, which was predicted to turn the region into a cattle-exporting area, may cause the flood plain to decrease by 26 per cent and the swamp by 41 per cent beyond the decrease caused by natural variation in the river (de Jong-Boon, 1990:225, Waterbury 2002:142). This reduction in flood plains diminishes the quality and quantity of vegetation, therefore, leading to diseases and affecting the quality of the herds and their market value. This leads to the impoverishment of the local population and causes a drop in the groundwater table, the loss of environmental diversity and drought in the long term (de Jong-Boon, 1990:213-35, Shaaeldin 1981:100-1, Mohamed Salih 1999:115-6). The canal 'will affect the way of life of the local Nilotic tribes' (El Moghraby 1984:41) and 'will change patterns of pastoral migration' (De Jong-Boon, 1990:217). It could thus lead to conflict over pasture and potentially uncontrollable ethnic wars.

The effects of the Jonglei Canal are not mere scientific predictions; they have already taken shape. According to Mohamed Salih (1999:116), 'Some Dinka have already felt the negative impacts of the scheme with the establishment of the first generation of irrigation canals.' Perhaps millions of heads of cattle have already perished because the canal prevented them from reaching their natural seasonal grazing destinations.

Farther north, the spectre of “ecological marginalisation” is yet again haunting farming communities half a century after their region last experienced it. This is caused by the several dams, we noted earlier, that are either under implementation or for which feasibility studies have been completed. It is thought that the mammoth Merowe Dam will affect small farmers downstream: it will be more difficult for them to irrigate their plots due to the lowering of the river level and the effects of a reduction in annual siltation (Askouri 2004b:57). Additionally, the Merowe Dam, according to Askouri (2004a:8, 2004b:56), appears to violate virtually all of the strategic priorities of the World Commission on Dams, including the displacement of more than 50,000 people, mainly small farmers living along the River Nile, whose lives will never be the same, as well as causing far-reaching environmental consequences, and inundating a historically rich area. The same old authoritarian development impetus prevails. When the affected people organised themselves in protest or called for involvement in the resettlement process, they were suppressed, prosecuted, detained, and tortured (Askouri 2004a:9, 2004b:56-7).

The excessive power incurred from the use of the Nile water generated its own irrationality. We noted earlier that the irrigated development in the downstream RZ gave birth to an entrenched agricultural lobby, reflecting the bonds of the political coalition between the state and farming communities (Chapter 3). The process of creating this coalition has engendered a predator, i.e. the *jellaba* merchant group, which, as detailed earlier, has extended its octopus arms and reached out to lands far away from the downstream RZ including those in which the groups displaced by irrigated agriculture have taken refuge. Possessing economic and political power, the *jellaba* developed an acute avariciousness which has been behind the seizure of millions of hectares of primary communal lands for private large-scale *rainfed mechanised farming*. ‘It is estimated that 80 per cent of the 350,000 pastoralists and agro-pastoralists of Southern Kordofan province are seriously affected by the expansion of large-scale mechanized schemes’ (Mohamed Salih 1987:112-3). A striking manifestation of how the “frontier-cast ideology” operates is that in some localities, such as Habila in the Nuba Mountains region of Kordofan, the *jellaba* captured almost entire areas of Nuba community land.

Habila rich agricultural lands were divided into two hundred schemes. Four were leased to local cooperatives, one was leased to a consortium of local merchants, and four individually to local merchants. The remaining 191 were leased to absentee landlords, mainly *merchants, government officials and retired army officers from the north*. Small holdings were destroyed to the extent that the inhabitants for the first time in their history faced famine (Al-Karsani 2000:44, italics added).

Over 95 per cent of primary land within this locality went to outsiders. Yet under a corrupt regime that justifies such unequal access, the insignificant portion

that was left to insiders, i.e. the local cooperatives could be skewed. Suliman (2000:219) notes the shares of groups (considered inhabitants of the Nuba Mountains) in one such cooperative, i.e. the Nuba Mountains Development Corporation. This corporation, established in 1970 with the aim of contributing directly to the productivity of traditional Nuba agriculture, allocated only 37 per cent of its land and services to Nuba groups, while 45 per cent went to Arab tribes and 19 per cent to Fellata groups. In short, the Nuba community, historical owners of lands in this locality, were left with about only 1 per cent of their previous lands.

The lands expropriated by the state and given to the *jellaba* were lands used by real communities, who when confronted by this condition in addition to the territorial limitations noted earlier, over-grazed and over-cultivated their environments, thereby degrading them.

*Over-cultivation and over-grazing as a cause of environmental degradation*

It is to be noted here that the assistance provided by the World Bank and funds from the Gulf States dramatically shifted access to resources to the powerful groups in the society (Chapter 5), giving added importance to clay zones while sentencing the sandy zones to neglect and therefore to further desertification. While the steady expansion of large-scale irrigated schemes is a major vehicle for accelerating drought and desertification primarily because it overwhelms fragile environments, mechanised farming reinforced this process and the expansion of the two sectors 'did *replace* and *compete* with nomads and petty cultivators' (Shaaeldin 1981:99, italics added). The state's expropriation of land turned its tribal users into rural landless who were 'displaced because no plans [were] designed to accommodate them after their land was expropriated' (Hassaballa and Eltigani 1995:28, Shaaeldin 1981:99). The nomads and petty cultivators, in turn, started to concentrate in smaller areas with increasing size numbers of their own as well as their herds, as noted earlier. The loss of land to mechanised farming, the constraints it generated and increased cultivation of cash crops by traditional farmers pushed pastoralists to marginal lands and led to over-grazing, which then became one of the major causes of desertification and droughts in the overwhelmed marginal lands.

It was in connection with food that the cause of desertification could be best grasped; deterioration of food production (Chapter 5) serves as an indicator of what might be the real cause of "desertification". In other words, rather than the encroachment of the desert, it was the "creation of deserts" at the local level, resulting primarily from the expansion of the cultivated area to compensate for the falling productivity. 'Though the impression is created as if the desert was creeping southwards with the north-eastern Trade Winds the sands actually originate from the Qoz-belt itself, *mobilized by intensive cultivation*' (Ibrahim 1978:247, italics added, see also Helldén 1988). Satellite photographs show that the expan-

sion of the desert occurs as a result of the creation of marginal lands in the vicinity of villages of the settled cultivators in the Sahelian zone of the Sudan (Helldén 1988: see also Hassan 2002:6).

Besides the impact of the expansion of large-scale irrigated agriculture and mechanised farming, pastoralists and cultivators have also contributed to the degradation regime (O'Brien 1985:27). Left with no option, the Hadendawa, for instance, started to depend heavily on trees in order to adjust to market forces, thereby jeopardising their traditional coping mechanisms and as a corollary contributing to the process of their marginalisation (Egeimi 1996:43). Devastating their forests for charcoal and causing an 'ecological holocaust', the Hadendawa were described as people 'digging their own graves out of need, not ignorance' (Christensen 2001:120,123). This process contributed to a marked shift in their attitudes (Egeimi 1996:43), which completely transformed the Hadendawa's world: nature, which in the past was managed for the benefits of the present and future generations, became the finite resource exploited to meet short-term benefits for the purpose of survival (Egeimi 1996:43). After their last fort collapsed, and environmental destruction became the norm, the Hadendawa – descendants of men who had inhabited the Eastern Desert for millennia – then started 'deserting the desert'. *Deserting the Desert: A Threatened Cultural Landscape between the Nile and the Sea*, a recent publication edited by Krzywinski and Pierce (2001), portrays and actually bemoans the tragic loss and dying out of this once resilient system.

Over-cultivation is associated with increased resettlement of groups. This results in a need for concentrated provision of rural water (Chapter 3), new territorial designs as noted above, villagisation policies (Chapter 7), and the structural linkages of traditional economies to the market.

While sedentarisation might be the principle condition for deforestation and thus, the creation of localised deserts, other factors reflect the hegemonic culture, particularly its "sub-ideology" of appreciating irrigated farming only and thus providing it support while neglecting the rainfed sector. This resulted in the tension between the intruding external system and the indigenous systems – a conflict between plantations of cash crops on the one hand and *acacia senegal* tree and millet on the other hand. This is a tension largely between the downstream RZ and the NRZ. In this respect, the sub-ideology of appreciating irrigated farming only has contributed to exacerbate deforestation and make it structural, especially in connection with changes in the "value" of *acacia senegal* trees and millet. Because of their soil-improving and stabilizing qualities, these trees provide the key to the prevention of desertification in this area (de Jong-Boon 1990:335). Their decline is therefore a serious warning of what is going on in the local ecosystem. A number of factors have caused the decline of these trees, according to de Jong-Boon (1990:335), including 'climatic (drought), demographic (increasing human and animal population leading to clearance for agriculture and grazing), political (e.g. the abolition of native administration... ) and socioeco-

conomic (farmers obtain low prices for the trees because government takes too large a share)'.

The introduction of cotton – the “white gold” of the riverain elite – contributed both directly and indirectly to environmental degradation. The direct impact is through capturing RZ land for cotton, thereby overwhelming marginal lands in the NRZ with groups displaced from captured lands in the downstream RZ. Indirect impact, from our point of view, occurred through the changing of the country’s priorities with regard to which crops to produce. The *gum of Kordofan*, which used to top the exports list, suddenly became a mere supplement to the flourishing *cotton of the Gezira*. Gum was now only secondary and as such no longer received the attention it used to. The increase in the value of cotton devalued gum arabic and the *acacia senegal* trees that produce it. The modern cotton sector came under strict regulation and monitoring and was subject to scientific experiments to determine the best methods for sustaining high output (Pollard 1985), while the gum arabic sector, though structurally linked to the *modern* market, had to make do with *traditional* regulations, still riddled with *pre-modern* imageries. This represents a typical shift from a forest value to a plantation value, where in the modern logic the latter historically “conquered” the former – increased commercialisation through assigning resources a market value and the need for cash.

A similar process of commercialisation allowed sorghum, grown mainly as a cash crop, to marginalise millet (the staple food of most people in the larger part of the NRZ). Abandonment of millet is observed by a number of scholars (see e.g. O’Brien 1985, Abdelkarim 1992, Umbadda 1981). Replacement of millet by sorghum has been part of a process which structurally involved rural areas in meeting the demands of the urban population as well as the international market for oil seeds, meat, etc. The expansion of capitalist agriculture gave birth to yet another contributing factor to the depletion of the environment by the way it generated the need for cash and structurally linked rural producers to it. In addition to turning those who once had lands into rural landless, the colonial mode of production integrated small-scale peasants and nomads into the market economy through the imposition of a tax system, which forced them to seek cash-generating activities to pay their dues (Al-Karsani 1998:180, Umbadda 1981, O’Brien 1985:27-8). This essentially means the further expansion of cultivated area beyond what was necessary for subsistence needs. Referring to the Khuwei-Mazroub area in northern Kordofan, Umbadda (1981:112) states that the opening of new lands for growing cash crops in addition to charcoal activities added greatly to the removal of the vegetation cover of the area, which was already seriously over-grazed by the increased herd. Shepherd and El Neima (1981:11) note that the area cultivated in the fragile sandy-clay soils of northern Kordofan increased from 1.5 million *feddans* in 1961 to 5 million in 1977.

Greater need for cash also affected the complementary and protective nature of crop diversification. In the 1970s, farmers abandoned the cultivation of millet

because it was too labour-demanding and vulnerable to birds, and as such deemed unprofitable under the new market regime. In the past farmers cultivated millet beside sorghum, as the former protected the latter from parasitic weeds (O'Brien 1985:28). Millet was increasingly overtaken by falling market value (for details see O'Brien 1985:28). Thus, the ecosystem-balancing crop was ditched in favour of the weed-vulnerable, ecosystem-degrading sorghum and, as yields of the latter dropped, more lands had to be claimed/captured and, therefore, more trees were felled. The ensuing deforestation of ecosystem-sustaining trees, such as *acacia*, meant an accelerated degradation beyond logging and clearing for agriculture. The dynamics of cash crop introduction also led to a decline in the number and size of protectors and an increase in predators and settlements.

The NRZ was overwhelmed by the production of "virtual water", in the form of cash crops and meat, for export to the powerful regions of the downstream RZ and to the international market. The mid-1980s drought came as a *coup de grace* to local communities, pushing them out of this niche. Their "virtual water" evaporated. Unlike El Obeid,<sup>6</sup> the seat of influential urban figures, these pockets had been neglected and continued to be water stressed (Chapter 3).

The expected result under the above circumstances is that the communities whose land were captured for mechanised farming would seek refuge on marginal lands and/or, otherwise, migrate to urban areas causing environmental damage in both cases as we shall see below.

#### *Urbanisation as a cause of desertification*

The changes in the physical environment, particularly following the British occupation, together with administrative necessities, led to the establishment of several towns (detailed in Chapter 7). The growth of these towns created high demand for wood from the surrounding forests, mainly for building materials, firewood, and charcoal (Mohamed Salih 1999:58). The rapid urbanisation of the last three decades coupled with increasing impoverishment has had a disastrous effect on the environment (for details see El Zain 2006d). Not only were the claimants of wood products in urban areas increased, but the rural population was left with almost no option other than to resort to tree-cutting (O'Brien 1985:28). The tragedy here is manifest in the high demand for charcoal and absence of alternatives around these towns coupled with pressure to cut trees for charcoal.

Locating the capital in the semi-desert zone and making it the centre of gravity and the destination of large numbers of migrants represents a striking environmental blindness as regards long-run effects. Khartoum not only attracted about a quarter of the country's population (Chapter 7) but also generated a momentum for a larger number of medium and smaller towns to radiate in its vicinity in the

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6. In mid-1990s a Croatian company started a project for supplying El Obeid city with drinking water. Completed in 1999, the project has now solved the water problems in this rapidly growing city, save for the problems arising from the pipes network which often breaks and floods the streets of the city.

semi-desert zone. The striking reality here is that you have the highest population concentration in the most sparsely wooded region. Lack of alternative fuel sources has made urbanisation a major factor behind desertification, yet with the historical political reasons associated with the consolidation of power contributing the most.

The link between rapid urbanisation and environmental degradation can easily be established. Khartoum Province (the Capital Region<sup>7</sup>), for instance, witnessed very rapid urbanisation accompanied by severe man-made deforestation. In the area between the Blue Nile and the White Nile, particularly, urbanisation and expansion of agriculture spared little natural vegetation (Abdel Nur 1991:37). Further north of Omdurman, Abdel Nur (1991:36) maintains that even the *khors*, such as Khor Al Abyad, Khor Al Akhdar, and Khor Bakheit, are bare of trees, presenting a good example of man-made desert creep. Complete deforestation alternates with reasonable cover on the eastern side of the Blue Nile (Abdel Nur 1991:37) in the capital region. This is yet another example of human damage to the environment.

Khartoum is causing rapid desertification in its surroundings: in 1972, the line of acacia (*sunt*) trees stood 90 kilometres south of Omdurman, but now it is 800 kilometres farther south (Suliman 2000:128). This change contributes much to our understanding of the altering ecological regime of the Nile. In this respect, rural-urban migration caused by desertification and civil strife has actually furthered the deterioration of natural resources and undermined indigenous knowledge (El Mogharby 2003:34) that might have led to better management of these resources.

It should be noted that the forests were cleared first in the downstream RZ, to make way for the greater economic benefits to be gained from annuals, including cotton, wheat, and recently, sorghum (Chapter 8). At that time wood and charcoal supplies were provided by remote regions, with the nearest and best-connected transport-wise most affected. The NRZ Red Sea and Kordofan regions suffered the most from deforestation to serve the charcoal needs of large towns in the downstream RZ (see Krzywinski and Pierce 2001). Increasing settlement also causes deforestation if there are no alternatives to using the forest. Trees in the northern parts of Kordofan and Darfur have been subjected to the impact of sedentarisation; the decline of *acacia senegal* (gum arabic-producing tree), especially in Kordofan, is particularly serious (de Jong-Boon 1990:335, see Ahmed 1987:136-7). One indicator of environmental degradation, especially in connection to the acacia trees, is the decline in export of the competent product of gum arabic. After a steady increase in its export since the early 1800s, which had reached 50,000 tons per annum by the 1960s, gum arabic exports started to decline. The 1970s marked the reversal of the trend, when exports amounted to only

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7. The "Capital Region" refers to "Khartoum State", previously known as "Khartoum Province". The three designations will be used in this paper interchangeably.

36,000 tons annually and plummeting to its lowest point, 14,000 tons, in 1984/85 (Stiansen 1998:85). Recently, however, the demand for wooded products is met from regions afar from the downstream RZ – southern Sudan – the upstream RZ, where logging under the pretext that trees provide hideouts to rebels has consumed large tracts of lands, creating desert-like conditions around many towns in this region (Majak 2000:45). As mentioned earlier, an “ecological holocaust” has been committed in the Red Sea Hills to supply large towns with charcoal.

These processes of security, territoriality, etc., have led to great losses of land that could have been productive. According to Hassan (2002:5), the area affected by desertification in the Sudan amounts to 1.3 million km<sup>2</sup>, i.e. 50.5 per cent of the country’s total area. Yet there has been little effort to combat this. The impact of the Sahelian drought was significant. The region hardest hit by drought and desertification in the Sudan lies between latitudes 12 and 18 comprising an area of 650,000 km<sup>2</sup>, or one-quarter of the total area of the country (Eltigani 1995:1, see also Al-Mahal and Omer 1992:14). Abdelgalil (2000:43) points out, ‘Land degradation is a serious problem that affects more than 60% of the country and manifests itself in declining land productivity.’ Mohamed Suliman (2000:126) points out that 17 million hectares have already been lost to soil erosion. The magnitude of environmental degradation in the 1980s proved different from that of the 1970s. Whereas in the latter, different communities survived degradation’s impacts, in the 1980s it had severe repercussions on the farmers and nomads who make up to 70 per cent of the country’s population. The traditional economy of these farmers and nomads is subject to greater environmental hazards, making them more vulnerable to risks of concentration and displacement than those in the modern sector (Abu Sin 1995:15). The consequences of drought and land degradation surfaced soon after the start of the 1980s, reaching their peak in the famine of 1984-85 (Chapter 5) and in the conflict over resources and chronic food shortage in the years that followed. Both famine and conflicts over resources have induced large population displacement, regionally from the fringes of the desert and the semi-desert zones to the rich savannah to the south and nationally from all drought-hit regions to the downstream RZ. The amassing of herds in the former and people in the urban areas of the latter are generating a multiplying effect on resources and certainly complicate the environmental problems.

Writing in the later 1980s, Jennifer Seymour Whitaker (1988:140) posits that ‘in the next twenty years, only an extraordinary effort at tree planting and family planning can prevent the decimation of the remaining woodlands’. Yet such efforts have scarcely occurred – in fact, only 30,000 hectares are reforested annually (El Moghraby 2003:33) – partly because political instability and deteriorating economic conditions make tree-planting appear to be a luxury, as well as rendering it inefficient or unaffordable. In the meanwhile, the burning of villages and adjacent forests, as well as scorched land tactics around the oil fields, threaten more looming deforestation and land degradation (ICG 2002:132-3, see Markakis 1998:92, Mohamed Salih 1999). The frontier-cast ideology appears so

entrenched that an apparent doomsday of Sudan seems not enough to shake it. Policy-makers, apparently, entertain a “desert imagery” which makes them hardly appreciate the value of forests.

*Increased incidence of riverain and flash floods*

Floods are probably considered a minor problem in the Sudan. However, in association with large-scale environmental degradation they have recently become phenomenal, contributing to soil erosion, desertification, and even displacement of some families which have undergone serious damage.

Mechanised farming as well as other unsustainable uses of land under the traditional sectors has resulted in effective ecological marginalisation and spiraling environmental degradation, causing a serious disturbance of the water partition and ultimately causing recurrent localised droughts. The latter took two forms, reducing humidity and increasing surface runoff, which we consider here as generation of scarcity in “green water”. The pattern of capitalist farming in the rainfed lands, according to O’Brien (1985:27), ‘deepened the predatory nature of its expansion. Tracts of hundreds of thousands of acres were clear-cut with World Bank assistance, reducing humidity and cloud formation and increasing soil salinity, and the farms were “mined” for quick profits before the soil gave out due to erosion and nutrient depletion’ (see also Suliman 2000:123). What has worsened the situation is that capitalist scheme owners exhaust their farms in an average of five to seven years and then move on to new fields (O’Brien 1985:27, see also Suliman 2000:126). The unprecedented floods of the recent decades (Chapter 9) are more likely the outcome of mass destruction of forests, which robbed the landscape of its natural buffers, therefore, decreased the different rivers’ and streams’ capacity for water retention. The latter contributes to a reduced humidity and cloud formation.

Increased runoff has other negative impacts, which combined with reducing humidity have even greater impact. These flash floods will be aggravated further by the very soil erosion they cause. Water erosion, according to Kamil I. Hassan (2002) is problematic in the sandy soils of the southern parts of the Kordofan and Darfur regions, where monoculture cultivation of certain crops prevails. Additionally, he notes, ‘Clearance of vegetation cover for mechanized farming aggravated the situation since it started what is known as sheet and gully erosion especially in the area southeast of Gedarif’ (Hassan 2002).

The enormity of floods, present in both riverain and flash flood incidences, could be seen as a clear indication of the enormity of environmental changes in the Sudan’s landscape and the vulnerability of large numbers of people to their negative impacts. Unlike in the past when the River Nile high floods occurred at long intervals, in the past 10 years the Sudan has experienced three such floods (Salih 1999:15), and their damage is more severe than before (Chapter 9). Sudan experienced high rates of floods in the years 1946, 1988, 1994, and 1998, with the

last considered the most destructive, according to official statements and government reports (Salih 1999:12). 'In August and September 1998 floods and heavy rains occurred in 18 of Sudan's 26 States. The combined results of heavy rains in Ethiopia and southern Sudan resulted in the highest river levels along parts of the Nile and tributaries since records began' (OCHA 1999b).

In 1999, floods impacted 10 states in northern Sudan, including Northern, River Nile, Khartoum, Al Gezira, White Nile, Unity, Kassala, North Kordofan, and South Darfur State (OCHA 1999a). The last three are NRZ states. In fact, the floods which impacted these states 'were flash floods', a fact which 'contrasts with 1998, when riverine floods, as a result of heavy rainfall, in the Ethiopian mountains, resulted in major damages' (OCHA 1999a). The surface runoff in 1999 was apparently enormous, where, as a consequence to the floods it had caused, about 85,000 houses were either destroyed completely or partially and about 1.8 million people affected, including 1.6 million in Khartoum State alone (OCHA 1999a).

Most striking with regard to floods, is that, apparently, their occurrence has become more frequent in the Sudan than ever before. The period between 2000 and 2002 witnessed six flood disasters, where two of them took place in the River Nile and Northern States, two in Sennar State, one in Southern Kordofan State, and one in West Kordofan (*NETWAS Newsletter*, 5 Jan. 2003). The last two are NRZ states.

These recent floods are not only different from the historical ones in terms of interval occurrence, but also in their geographical scale, which now covers the RZ as well as the NRZ. In other words, a new character of floods in the Sudan is manifest in that floods now seem to impact areas which rarely, if at all, experienced floods historically. A typical example here is the NRZ state of Northern Kordofan; as floods have become perpetual in this sandy semi-desert region. The flash floods of 1994 affected sandy areas as far north as Hamrat Alwaz in Northern Kordofan State, killing eight people and displacing 400 families (Dartmouth Flood Observatory 1994). Four years later, the same state, particularly its province of Um Ruwaba, underwent the impact of flash floods. In this province, floods affected about 5,000 persons, and their severity resulted in households losing all their possessions and homes (OCHA 1998). North Kordofan, in 1999, underwent flash floods for the third time with Sodari Province receiving the brunt, with 150 houses damaged and 180 families affected (OCHA 1999a). Similarly, the NRZ state of Southern Kordofan underwent flood damage, with heavy rains destroying large parts of Kadugli town in Southern Kordofan state, affecting 18,841 individuals (IFRC 1999).

#### 4.4 Resource conflicts: Devastating the NRZ/upstream RZ and blocking the “open frontier”

This section covers conflicts “between ecological zones”, which in both the RZ and the NRZ, are an expression of civil unrest with repercussions for Nile water. These repercussions include loss of the “green water” that historically relieved the Nile’s “blue water” from pressure. The argument here is that conflicts between ecological zones led to a blocking of the once “open frontier”, which was considered to be the abode of “alternative source of water” that would cater for future demands. The loss of “green water”, precisely, refers to mass displacement/out-migration of those who historically benefited from these waters in the traditional farming and pastoralist sectors. Induced by environmental degradation and conflicts, the “loss” of “green water” has translated into increased demand for the Nile’s “blue water” because of the mass resettlement of the once green water-supplied rural populations (Chapter 6) and rapid urbanisation (Chapter 7) in the downstream RZ. Other repercussions include the impact of population concentration on the international hydropolitics of the Nile, which are detailed in Chapters 12 of this book. Some aspects of conflict at the national level are covered in Chapter 8.

##### 4.4.1 Localised conflicts

Conflicts among tribes were normal in the history of the Sudan. Goldsmith *et al.* (2002:189) point out, ‘the Sudan has been plagued for centuries with resource-related conflicts’. With particular reference to the zones of current civil wars, Al Bander (2000:1) concurs that these zones did not witness the relative peace and stability enjoyed by other parts of the country. Rather, for five centuries, they have been continuously subjected to the fires of expeditions sent by central governments eager to exploit their resources. Tribes scattered in the states of Southern Kordofan, Western Kordofan, Southern Darfur, Western Darfur, White Nile, Blue Nile and Gedarif have historically engaged in conflicts over natural resources, namely pasture and water (Ibrahim 2002:162, see also Suliman 2000, Mohamed Salih 1993:22, El Nagar 1993:99). Conflicts often break out between pastoralists and farmers, where livestock and grains represent the backbone of the rural economy for the two groups, respectively (Ibrahim 2002:162, El Nagar 1993:99).

As discussed earlier, the state’s expropriation of land and its reshaping of spatial relationships in the last century resulted in increasing ecological marginalisation, mass impoverishment, and persistent tribal and civil wars, which together induced mass destruction of resources and the resultant displacement of populations. As such, “resource capture” by the state and state-backed groups led to the intensification of the historical conflicts noted above. According to Suliman (2000:133), land appropriation played a central role in adding to the

civil war over resources, without due recognition from those who benefit from the continuity of these wars. Ethnic groups are fighting the state as they come to realise its involvement in the looting of their resources (see Mohamed Salih 2001, 1999). Since the Koka Dam Declaration in 1985, natural resources have become an important point on the political agenda. The declaration, for the first time in the history of civil wars in the Sudan, involved an agenda on natural resources added to the agendas of the National Constitutional Conference (Suliman 2000:169).

Before we detail some of the resource conflicts between “macro-coalitions” driven by ethnic ideologies, we should point to an environmental condition, i.e. the nature of ecological zones, detailed at the beginning of this chapter, which seems to define conflict in the Sudan at the local, regional, and national levels. Indeed, ethnic distribution follows rainfall distribution; the ecological zones, as described by Suliman (2000:113), varying from the southernmost to the northernmost parts of the country. Thus, in the southernmost part, where forests prevail, pure African groups are found, who neither speak Arabic nor espouse Islam. North of this is the zone of tall grasses and flood plains where African groups partly espouse Islam and speak Arabic while maintaining their mother tongues. Farther northward, in the savannah plains zone, there are varying degrees of ethnic and cultural mix and the groups herein largely espouse Islam and have adopted Arabism to the extent that their own languages are dying out. Next to these are the Arab groups, which have mixed with indigenous groups while maintaining, to some extent, their Arabic dialects and Islamic religion. The gradual tribal mix and acculturation continues until we reach the northernmost parts, where in some areas we find Arab tribes that did not mix with indigenous people at all and whose features do not differ from those on the Arab Peninsula (see Duany and Duany 2000:171-8). This longitudinal effect of thin resources in the north and gradual richness farther south determined the fortunes of population groups. The ends of the pole indicate that the southern part is richer in natural resources and the northern part is less rich or poorer (Goldsmith *et al.* 2002:189).

The risks and hazards happening within each zone determine inhabitants’ vulnerability to conflicts; and it is the balance of powers between groups that maintains relations between people of neighbouring zones. In Sudan’s recent history the formula that kept ethnic groups largely within the boundaries of their own ecological zone has been frequently disrupted in such a way that those who became politically powerful were the inhabitants of the resource-poor zones and those inhabiting the resource-rich zones were increasingly marginalised. The carving out of the modern Sudan actually has brought large expanses under one centralised rule (Chapter 3), which probably for the first time in history, put the whole of the northern, resource-poor zones in potential confrontation with the resource-rich zones to the south. The ecological zones accommodated culturally defined modes of production, i.e. nomadic camel herders (Arabs), settled farmers, and cattle herders (largely African). In the past, groups from the resource-poor zone had individually fought other groups who also fought back

individually. Although tribes did strike alliances, in the pre-1980s period, we have not come across any examples of alliances that assemble tribes of a whole region or sub-region against another alliance of tribes beyond their locality. This became possible in the 1980s and has continued since then.

In the period under study, the nature, intensity, and outcome of conflicts changed. Starting in 1820, Turkish rule, through disturbing the balance of powers among Sudanese communities, helped open up possibilities for new adventures and whetted the appetite of some tribes, namely those favoured by the political regime of the time. The cultural capital of symbiotic relationships which had evolved from the long process of interaction between inhabitants of arid zones and those in the savannah (Chapter 3) initially served as a refuge for tribes escaping the Turkish terror (Chapter 6). However, later the balance of powers was disturbed, both demographically and militarily, among groups, ultimately leading to a form of political alliance between the “Arabs” and the Turks. The disturbance of the balance of power was to the benefit of a *bloc of Arabs*, at the expense of the non-Arabs, reaching its peak in the destruction of the Fur Sultanate in 1874 (Chapter 3). In fact, some nomadic Arab tribes had become inherent in the rescaling regulations of the colonial as well as national governments. Whether under the Turks, the British or the national elite, the Sudanese state has always allied with, and/or used an Arab stock (escapees, immigrants who took refuge in southern and western Sudan to avoid the invaders and/or nomad tribes) for its territorial expansion and for subduing the opposition.

Mahdism, though it at first co-opted different ethnic groups under its banner, turned into a system of a few dominant ethnic groups against the rest. The territorial designs affected by the British administration some eight decades following the advent of the Turks, brought to the fore more intensive and enduring tribal conflicts which were sometimes encouraged by the British. For instance, in order to weaken and later to crush Ali Dinar, the Sultan of Darfur, the British in 1915 loaned the Kababish and the Rizeigat tribes 200 and 300 rifles, respectively; one year later the sultan was killed (Harir 1993:25, see also Frantz 1977:183). While this served the British strategy in Darfur, it certainly affected the attitudes of these two Arab tribes towards their neighbours, given the new “morale” they acquired, being participants in the collapse of a standing and powerful African kingdom. The nomads who were the subjects of the Fur Sultanate, namely the Baggara (see Harir 1994), afterwards developed a “spirit of conquerors” which troubled their neighbours during colonial times and even more in the post-independence period. The state also engaged in persistent conflicts with different communities through its punitive campaigns (Chapter 6), which unleashed incredible violence upon the country at large. Like the Turks, the British disturbed the balance of power among Sudanese communities so thoroughly that it is still unbalanced today.

However, the scale of tribal wars in the post-independence period – especially in the 1980s – is incomparable to that of previous eras. Surprisingly, despite the brutal British campaigns (details in Chapter 6), the Condominium is considered

‘a tranquil and peaceful period’ (Harir 1993:18) compared to national rule. There were fewer reasons to conduct feuds than during the later decades of post-independence. ‘With hindsight’, as Ahmed and El-Battahani (1995:201) argue, ‘life in the 1950s was a lot easier than in the 1990s and the poor then were better off than those of the present day’. The degree of ecological marginalisation was much less during the colonial period, and the rulers espoused the notion that resources were limited and they therefore managed them efficiently. ‘The present inefficiency and widespread corruption, which are central causes of poverty, would have been unthinkable in the mid-1950s’ (Ahmed and El-Battahani 1995:201).

Although groups in different parts of the country kept their tribal ideologies intact throughout the post-independence era, mobilisation along “ethnic” lines was not as overt as it became from the 1980s onwards. Two forces combined to reshape this process. One was the effective capture of the wetlands by the state-backed *jellaba* group and the other was the occurrence of natural hazards, particularly droughts in arid zones, largely due to “resource capture” and “ecological marginalisation”. Probably until the mid-1970s, conflicts between farming communities and pastoralists were mild or at least infrequent and not devastating. According to O’Brien (1985:27), many of the pastoralists who were displaced from their pastures by the rapid expansion of mechanised farming in the 1960s and 1970s ‘either found open land to cultivate instead or maintained sub-optimal herding units through heavy reliance on seasonal wage labour to supplement herding incomes’. However, this changed and now ‘conflict rather than co-operation has come to dominate most relations between settled and nomadic... herds have come to be barred from agricultural fields’ (O’Brien 1985:27).

Conflicts caused by ecological marginalisation can be classified into two types: those caused by an immediate “resource capture” and those indirectly attributable to such capture. The first type can be viewed in three categories, each of which, according to Suliman (2000:138-9), relate to expansion of mechanised farming. The first is conflict between traditional farmers and large schemes’ owners. This conflict occurs because farmers are obliged to sell their produce for low prices and pastoralists are removed from the richest traditional grazing areas (for further details see Ahmed 1987:136-7). Abdel Gaffar M. Ahmed (1987:137), who has studied this type of conflict, points out that agricultural development plans in the savannah belt, including both irrigated and rainfed areas, have aggravated conflicts between sedentary cultivators and pastoral nomads and been a curse for local populations (see Mohamed Salih 1999:60). Second is conflict among communities in the vicinity of large agricultural schemes. This type of conflict relates to the contraction in the size of cultivable land, obstruction of herds’ passage, and the search for new pasture areas. The third type of conflict is that between the state as protector of the schemes’ owners, on the one hand, and smallholder farmers and pastoralists, on the other. Being linked to the expansion

of mechanised farming, all three of these types of conflict emerged largely from the 1970s onwards (see also Ahmed 1987:137). According to Suliman (2000:139), the period between 1970 and 1985 witnessed the highest escalation of tribal tensions and conflicts, with 20 conferences held to resolve conflicts connected to land among different ethnic groups in the central rainfed areas. The anticipated resource capture that would result from implementation of the Jonglei Canal project would certainly add to these tensions. Thus, the historical political conflict between northern Sudan and southern Sudan, with its strong hydro-political dimension, is evident here as a conflict between the state, on the one hand, and politically and militarily organised tribal coalitions defending larger resource niches on the other.

The conflicts caused indirectly by resource capture have generally taken a longer time to surface and arisen mainly in areas without immediate resource capture or where the resource capture was of a lesser magnitude. These are namely in the fragile soils of the sandy zones such as those of northern Kordofan and northern Darfur, which did not attract mechanised farmers on the scale of that in the clay soil zone. These conflicts seem to have originated from the long processes of overwhelming the environments of these regions either by groups whose resources were being captured or by their own population groups who were blocked by direct resource capture elsewhere and made to cultivate cash crops as mentioned earlier in this chapter. Conflicts of this type took place mainly among local communities, though at a later stage they engaged other actors, including the state. The centuries-long strategies that the savannah zone's groups used to cope with droughts came under severe pressure after 1967 due to the persistent decline in rainfall, with its deficit ranging between 40 to 50 per cent compared to the previous 15 years (Suliman 2000:128).

Environment degradation on the fringes of the desert and the resultant conflicts had a political cause as well, namely the process of centralisation. The very process of political and administrative centralisation brought to an end several centuries-long income generating-activities, thus increasing dependence on cultivation of cash crops. These activities include engagement in long-distance trade by tribes on the desert fringes as well as long-distance transportation and the taxation of trading caravans passing through their territories (see Adam 1987:18, Stiensen 1998:69-70). Centralisation caused these changes; it made Khartoum the new "Rome" – all trade routes, traversing the many regions in the past were now redirected toward the Nile axis, particularly the confluence of the White and Blue Niles. Associated with centralisation was the expansion of cultivated areas to meet the expanding demand for cash crops and grains for domestic consumption and for export (Chapter 5). This expansion also brought to an end several seasonal jobs men used to engage in as *dandara* (those 'migrants who rented gum gardens on a seasonal basis') (Babiker 1998:209). The structural link to the market also brought local welfare systems to an end (Chapter 7). In addition to this, blocking traditional farmers and pastoralists from specific regions from ventur-

ing, as tenants, into the irrigated central RZ (Chapter 8) and as farmers and herders onto fertile lands in the wetter zones to the south effectively squeezed them into limited areas, heaping yet more burdens on the exhausted local environment. The environmental pressure on land in western and eastern Sudan also worsened as a result of external factors, mainly associated with the Chadian and Eritrean wars. For instance, the influx of Chadian groups into the Sudan increased both the human and animal population beyond the carrying capacity of the host areas. War also halted the traditional migration of some pastoral groups such as the Kababish from neighbouring Kordofan (Ahmed 1993:117).

All of the above forms of local (micro-level) conflicts caused directly or indirectly by resource capture/ecological marginalisation have, since the early 1980s, increasingly expanded on a regional scale as well as in their intensity, involving armed alliances of tribal groups and leaning towards racial ideologies –an emergent condition characterising the current tribal setting. This emergent condition represents a shift from localised conflicts that, in the past, took place largely *within* ecological zones to conflicts *between* ecological zones. The long processes of resource capture and ecological marginalisation, triggered by “natural” hazards of the 1980s had, thus, in addition to the localised (micro-) coalitions (i.e. coalitions among clans or neighbouring tribes of a locality or a smaller section of an ecological zone), brought to the political scene, meso-, and macro-coalitions of tribes with the aim of conquering new niches in other ecological zones. I use “meso-coalition” here to refer to larger coalitions of tribes (implicitly) comprising tribes of a whole or a larger section of an ecological zone, while I use “macro-coalition” to refer to the alliance between coalitions of tribes and the state/state-backed (agribusiness) groups where the latter use ethnic/religious discourse to mobilise the former.

Conflict between ecological zones had been particularly triggered by recurrent droughts, especially since early 1980s, where both the predators or resource capturers (i.e. the agricultural lobby) and their victims (i.e. the ecologically-marginalised pastoralist groups) from the resource-poor regions would start acting in harmony against groups in the wetter zones to the south. While the former, the agribusiness group was speculating on greater fortunes from the grain dearth caused by drought, the drought-stricken nomadic tribes were looking for pasturelands to the south, which now environmental changes have rendered them suitable habitat, namely for camels.

Abdel Ghaffar M. Ahmed (1987:136) notes that the immediate reaction of the drought-stricken population in recent years was to take refuge in regions adjacent to their marginal lands.

They started moving south with their animals into the savannah belt. It is here that we see a *new phenomenon* of adaptation, not only by the human population, but also by the animals. Herds of camels are *for the first time* seen grazing south of latitude 9°N, an area which their herders used to avoid, due to the presence of flies and clay

land which is not favourable for the animal (Ahmed 1987:136, italics added, see also O'Brien 1985).

Associated with this dramatic change of habitat and as the most radical change to take place recently, is the desertion of the desert, as noted earlier. This simply means populations moving towards the two axes of the savannah belt and the RZ, where in both cases the rate and intensity of conflicts with recipient communities is also increasing.

The savannah belt, which could have accommodated the drought-stricken groups, now faced serious consequences for accommodating such groups, as Ahmed (1987:136) argues, 'due to decreasing productivity, the result of crop damage caused by the newly arrived herds. Hence, the production of gum arabic in the belt is rapidly decreasing, due to the browsing of camels on the *Acacia senegal* trees' (Ahmed 1987:136). The impact of the southward movements reached even farther south thanks to increased politicisation and polarisation along lines of ethnicity and modes of economic activity. According to Majak (2000:46), the outbreak of the prolonged drought of the 1980s caused many Arab pastoralists as well as immigrant Muslim Fellata of West African origin to pour with unprecedentedly large herds across the border into Bahr al-Ghazal Province. These groups over-grazed and soon seriously damaged the rangelands, overfished the streams, cut down valuable trees for forage, burned grasslands, and launched a hunt leading to the extermination of large and small game. It should come as no surprise that, according to Majak (2000:46), 'hostilities soon broke out between the Dinka of Bahr al-Ghazal and the Arabs and Fellata who had invaded their homeland'.

While the nomads' mode of production might inflict some damage on the environment in their southward movement, the intervention of agribusiness caused more acute damage with its aggressive use of tractors in a fragile ecosystem. 'In six decades from the mid-1920s to the early 1980s, use of tractors in cultivation in Sudan rose from virtually nil to covering about 49% of the total land cultivated' (Abdelkarim 1992:17). Both groups of new claimants treated land in the abode of "alternative water resources" carelessly, for it was not theirs. The outcome of this process in recent years has been the acute environmental deterioration of the savannah belt.

Since early-1980s, need to share resources with host communities has become almost permanent, thereby creating seemingly insurmountable obstacles (Suliman 2000:127). This new condition has brought about new arrangements among the competing nomadic tribes in that they came together to build (blurred) meso-coalitions for conquering new habitats that might be defended fiercely by their inhabitants. At the macro-level, the same stark environmental situation has compelled the state to adopt some regulation, including religious ones, which ultimately served the powerful segments of society. This is manifest in mobilising large numbers of rural immigrants in *jihad* campaigns (El Zain 2006b, 2006e,

2002b), which were essentially launched to secure resources in the “open frontier” as we shall see below.

#### 4.4.2. *Jihad* as mobilisation ideology for capturing communal resources

The scale of expansion of mechanised farming and the staunch resistance to this expansion in the last two decades or so has implied a shift in state discourse or more precisely forced the ruling elite to declare the Sudan a state under Islamic *sharia* laws. At the peak of the assault by the agribusiness and the nomadic groups on local farmers’ resources the latter was made to form the core of the *mujahideen* militias and the former supplied them with *fatwas* (religious rulings) justifying the mass murder of their fellow poor farmers. The adoption of *sharia* (Islamic law) under president Nimeiri dictatorship in the period between 1983 and 1985 and under the totalitarianism of the National Islamic Front (NIF) (1989-2005), especially with its *jihad* (holy war) component, arguably represented the highest expression of “frontier-cast ideology”. Macro-coalitions began at this point, which widened and intensified the resource conflicts. Although the coalition-making involving the state could be traced back to the period 1983-86 under the May dictatorship and under the elected democratic regime (for details see Goldsmith *et al.* 2002), a clear-cut polarisation took place only later by 1990 when the NIF government had officially recognised the tribal militias, following the issuing of the Popular Defence Law (Suliman 2000:143).

The implementation of Islamic laws (*sharia*) in September 1983 provided the ruling elite with a new fuel for capturing more resources, especially through launching *jihad* campaigns against the rebels (read “infidels”) of the Sudan People’s Liberation Army/Movement (SPLA/M) who started the second civil war in May of the same year. Since then *sharia* was used as a rescaling regulation, as a technology of control and suppression and, through *jihad* campaigns, it turned into a more overt expression of the “frontier-cast ideology”. This is because the existence of the Islamic state (concretely seen in the implementation of *sharia*) necessitates defending/spreading the faith in the lands of the “infidels”. Its frontier and battleground being southern Sudan, this justified religiously the looting of southern communities’ resources with the greatest of rewards for the *mujahideen* – rewards in this worldly life and in the guaranteed paradise when they fall as martyrs – to carry out aggressive *jihad* campaigns. The result of the historical looting of the resources and the current cultural (religious) justification of this looting is persistent armed resistance, espoused by almost all marginalised communities with the ultimate goal of “liberating”<sup>8</sup> their resources (homeland) from what they often label as internal colonisation.

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8. All armed movements in the Sudan, including the SPLM, SLM, the East Front, have all called the areas they took control of “liberated areas”.

#### 4.4.3 Contemporary anti-hegemony civil wars and regaining/blocking the “open frontier”

In this section we shall see how localised grievances caused by resource capture (e.g. of water and land) fuelled full-fledged civil war between the state and a “coalition” of marginalised rural communities with religion/ethnicity featuring as its most driving force. It is important for this research to consider the civil war because, besides contributing to the population concentration in the RZ, it has blocked the “open frontier” that historically relieved the Nile from stress by absorbing out-migrating groups (Chapter 6). Blocking the “open frontier” means chasing out the stock that originally came from the resource-scarce northern regions, including nomadic tribes and necessarily the *jellaba* agricultural lobby. More importantly, civil war has reshaped the local hydropolitics of the Jonglei Canal with significant national and international repercussions (Chapter 9). If the current regional fronts, which have risen to arms, secede, all the headwaters of the Nile system within the border of the Sudan will be under their control. Yet, if they stay in a united Sudan, their political weight is so significant that they not only re-define accessibility to resources in their ancestral homelands, but also resources in the downstream RZ itself. At this stage, conflict between the hegemonic downstream RZ elite and NRZ/upstream RZ groups over resources in general and the Nile waters in particular should be seen as a conflict embedded in the “political” and in issues of citizenship and the right to settle in the neighbourhood of the seat of power in the downstream RZ (Chapter 8). In fact, the struggle is taking the form of a strive of Sudanese ethnic groups to influence and appropriate state power (for details see Mohamed Salih 1999, 2001), rather than being manifest as a concrete conflict between groups of population or sectors over resources per se. In the Sudan, like elsewhere in the Horn of Africa, ‘the state became the object of conflict, as well as the means with which the conflict was waged’ (Doornbos *et al.* 1992:4). Conflict in the Sudan is between the ruling elite, at the core of which are those who came to dominate through the use of the Nile waters and who were strengthened by the outcomes of the development of irrigated agriculture (Chapter 5), and those whom this elite exploited, marginalised, and deprived of the fruits of development. The facts of exploitation and marginalisation, resulting in mass displacement are crucial in defining the relationship of marginalised communities to the states. As noted elsewhere, political marginalisation of pastoralists and exposing them to growing economic and social inequality induced movement out of their sector, which ultimately reinforced ‘the gradual shift of the point of gravity from the pastoral non-state to the state sphere’ (Doornbos 1993:119).

The conflict between the state and marginalised rural communities in southern Sudan deserves a closer look. The south is not homogenous though; it has its own internal tribal conflicts (see Goldsmith *et al.* 2002) as well as conflicts between its tribes and other tribes in northern Sudan. However, due to a complexity of fac-

tors, namely the outcome of scalar politics, including being constructed as the “minority” with many other political, cultural, and economic disputes remaining unresolved, the south has fought for some four decades as a distinct South against a rather hazy North. Historical prejudices and mistrust associated with the perceived “open frontier” for expansion coupled with economic negligence invoked civil war in southern Sudan even before the Sudan acquired full independence. What is important for this research is that the south has become the symbol for all marginalised regions, whose armed movements ultimately adopted a “southern discourse” and through pledging to regain their historical resources, they seem set to transform the notion of “open frontier”.

The first civil war between the rebels of the Southern Sudan Movement (SSM) and the central government, which continued for 17 years, was considered basically an ethnic-political war (Suliman 2000:142). It was largely fought over participation in the state apparatus, which was the paramount definer of use of and access to resources. The commitment to modernisation aided by an earnest development discourse forced the Sudanese foes to reach a deal in Addis Ababa in 1972, giving the Sudan its only decade of peace since independence in 1956. The 1970s witnessed the conception of some large development projects, but the south benefited too little and was saddled with some of the most destructive aspects of the development venture as manifest in the Jonglei Canal. The Addis Ababa Agreement between the north and the south, which paved the way for releasing the country’s economic potential, was aborted by its initiator, President Nimeiri (Duany and Duany 2000:175, Suliman 2000:141, Waterbury 2002:146) in a move that seemed both abrupt and unjustifiable.

The second and current phase of civil war – ongoing since 1983 – following the dishonouring of the Addis Ababa Agreement has been marked by a more overt natural resource-driven conflict, which overcame the previously blurred elite-defined conflict. The impact of drought in the north, including the speculative mood it affected on the agricultural lobby, reshaped to a great extent the course of the civil war in the south. It is environmental scarcity, however, in conjunction with the causes of the first civil war, which aggravated the conflict between southern and northern Sudan. Suliman (2000:142) views the second civil war as over resources (land, water, and oil) fuelled by ethnic, religious, and cultural differences. Suliman (2000:168) makes an important observation, that the second civil war is led by the Nilotic tribes, whose resources are subject to direct assault from the *jellaba*. The latter, being influential with regard to reshaping state policies, has entertained a misconception, which probably underlies the long continuity of this war. The *jellaba* looked at the Nilotic-dominated SPLM of the 1980s onwards in the same manner that it looked at the Equatorial SSM of the 1960s. However, there is a large difference in that the SPLA represents the groups that are in *direct* collision over sources of livelihood with the “Arabs” advancing therein both as nomads and as *jellaba*. The defiant resistance of Nilotic tribes means the effective blocking of the “open frontier”.

Mohamed Salih (1999:114-6) identifies four factors that he considers to play an important role in stirring up trouble in southern Sudan. These are the imposition of the *sharia* (Islamic Law) in 1983, the creation of tribal militias by the government to serve as paramilitary groups, the construction of the Jonglei Canal, and the discovery of oil in 1976. The proposal to implement *sharia* has always been a thorny issue between northern and southern Sudan since the first attempts at implementing it in the late 1960s. However, it was implemented in 1983 when national institutions started to experience serious setbacks (see Mohamed Salih 1989) that would later prompt the political leadership to lean on tribal militias. *Sharia* implementation by Islamist Sudanese raises some interesting concerns. More detailed examination of the factors that agitated the southern Sudanese sheds light on the nature and dynamics of conflict in the Sudan and on the role of *sharia* as a “technology” of control and suppression and as an instrument to facilitate the looting of the resources of the marginalised communities.

Besides the processes of political exclusion and economic marginalisation that inflamed the first civil war, it was the Jonglei Canal and oil that generated the most resentment in southern Sudan. The first was launched in 1974 and the latter in 1976. The other two factors, i.e. implementation of *sharia* (1983) and creation of militias (1986) were actually reactions to what the Jonglei Canal and oil invoked – they are “technologies” for counteracting the SPLM rebels, who by now had more power, both ideologically and militarily, than the SSM had ever enjoyed before. Thus, the conflict between the central government and the coalition of ethnic groups in southern Sudan in the 1980s would seem to be primarily over natural resources, for it was no longer an elite-defined contest for power, but rather a situation in which tribesmen of all ethnic walks in the south began to suffer. But this should essentially be viewed from within a heightening scarcity in government revenues maintained through a carrot and stick in the involvement in the oil business.

Apart from conflicts over pasture and water sources between tribes from northern Sudan and those from southern Sudan along the so-called “front line” (*khat at-tamaas*), the engineering of the *Sudd* region for its water and a few years later the discovery of oil represent the most crucial current issues that invoked conflict. And for tribesmen the first, i.e. water, tops everything else. It is in connection with this that we claim the conflict in the south now involves large groups from the popular masses and is more than a southern elitist contest leading to tense domestic hydropolitics. Driven directly by their livelihood questions, the involvement of these popular masses has essentially blocked the “open frontier”. The argument here is that the notion of augmenting the water supply to northern Sudan and Egypt, as perceived in the 1970s, thus is increasingly losing legitimacy.

A significant percentage of the southern Sudan’s population depends directly or indirectly on the water that the Sudan and Egypt intended to channel for the irrigation of remote deserts in the north. Most importantly, however, the

channelling of water would affect the most powerful groups straddling the *Sudd* region. According to Mohamed Salih (1999:15), the construction of the Jonglei Canal would have inevitable far-reaching negative environmental and livelihood consequences on the Dinka, Nuer and Shilluk groups which inhabit the *Sudd* area (see also Goldsmith *et al.* 2002:214). The fact that these groups maintain strong collective identities makes conflict, resulting from activities that generate environmental scarcity, a predictable consequence. Civil war, in part caused by the canal project, has replicated the plight of the groups in the Jonglei area by decimating their herds (for details see Ahmed 1993:120-1) and rendering them vulnerable to famine (Chapter 5). The project, which was planned for completion in 1985, threatens riverain lands in the Sudan with profound, incalculable effects in addition to a whole new set of ecological problems (Davies 1984:146; see also El Moghraby 1984:41). Groups therein have therefore become increasingly militant.

Thus, a counter-check to the state's designs to own the Jonglei Canal has become a reality, facilitated by the weight of population in the remote region contesting for the ownership of the Jonglei Canal. The most significant "fact" about the canal's effects is that they have become part of a mobilisation discourse against the central government and its foreign allies (Chapter 9). For the upstream RZ groups, the war against the central government is one to defend livelihood sources. Yet it is also one in which the government is perceived as representing predatory pastoralist groups. According to Goldsmith *et al.* (2002:215), 'Despite statements that the SPLA/SPLM seeks a united Sudan, many rural Dinka see the movement as an organisation defending its interests in opposition to the competing interests of other ethnic groups.' Southerners also see the struggle over the Jonglei as a defence against Arab colonisation (Chapter 9). Referring to the Jonglei Canal, Hancock states that an 'even more fundamental problem also emerged: hostile opposition from southern Sudanese peasants who feared that an invasion of wealthy *northern* farmers would follow the Jonglei's slow but remorseless progress' (Hancock 1989:149, italics added). Thus, it was natural that when the long-expected civil war finally broke out in 1983, the first action of the SPLA was to hit the Jonglei Canal (Hancock 1989:149, Suliman 2000:179, Mohamed Salih 1999, Goldsmith *et al.* 2002:205).

In relation to the Jonglei, it is important to note that the notion of "open frontier" available to decision-makers for expansion together with the entrenched water "supply-oriented approach" in practice made it too difficult to augment the water flowing north by draining the *Sudd* waters. In fact, the more than two decades of civil war attributable in part to the Jonglei, should have fostered other solutions for water scarcity in northern Sudan. However, as is often the case, increasing water shortages and conflicts among uses, users, and geographical areas means that a supply-oriented approach will lead only to more severe water shortages and reduced use options in the near future (Garduño 1999:69). Such a development, in Turton's (2000:120) view, invokes the early notions of water de-

mand management, with the overall management function shifting from the pure engineering desire to increase water supply to embrace elements of end-use or allocative efficiency (Turton 2000:120, Garduño 1999:69). In reality, however, the drive to augment water from the *Sudd* has never stopped; it has featured high as part of the NCS. Fears in the south are real, and the avariciousness of the *jellaba*, as noted in the case of Habila area, means expansive ethnic cleansing is likely to occur matched only by the degree of fertility of lands in southern Sudan.

Related to water is the issue of land, Mohamed Suliman (2000:141) would add land looting as another crucial factor in defining the course of the civil war – both as a contributor to the determination of the southern Sudanese to fight to defend their lands and as a factor complicating the war dynamics among the southerners themselves. In his view, increasing environmental problems in northern Sudan have initiated the search for new resources, especially in southern Sudan, where several projects for exploiting oil, water, and expansion of agricultural lands under the banner of “development” were anticipated. The economic returns to these projects, however, go to the *jellaba* group (Suliman 2000:141), as typically experienced in the past. The increased population concentration in the central RZ (Chapter 7), especially in urban areas (Chapter 8) signalled a severe grain dearth, which invoked the agricultural lobby, especially its Islamist faction, to speculate on greater fortunes from irrigated food production. The need for water to meet these new irrigation investment opportunities may have encouraged the agricultural lobby to seek an end to the military conflict in the south.

The period following the signing of the Addis Ababa Agreement represented a turning point; for it was the first time since the days of slave trading that the south became economically attractive to the northern Sudanese bourgeoisie (Suliman 2000:141). Barnett (1988:3) notes that ‘the two regional investment projects on which central government spent most time, energy and money in the later years of the Numeiry period were oil exploration and the Jongeli Canal Project in the south – both of which can be perceived of as ways of transferring natural resources, oil and water, from the south to the north’ (see also Barnett and Abdelkarim 1991:99). Suliman (2000:142) notes that the second war coincided with the most massive assault, up to then, which the Sudanese bourgeoisie launched to capture resources and cattle economies in the south. He notifies that some objectives, which had made southern Sudan to the *jellaba* militarily and economically important. These were the southward expansion of mechanised farming, necessitated by the ecological degradation in the north, the discovery of oil in the Bentiu area (Unity State), and the possibility of adding more water sources from the Jonglei, in addition to lands of the swamps area which could be exploited for mechanised farming. In relation to its military importance, Suliman (2000:142) adds the necessity for constructing an all-weather road passing through the towns of Jebelein and Renk and across the swamps to link the north to Juba City. This road was to be constructed by the Jihadi Iranian group at the cost of the Iranian government. Suliman makes the important observation that the

choice and insistence of the government to reach a deal with the Nasser Group,<sup>9</sup> after splitting from the SPLA, was not a coincidence; the fact that the Nasser Group was in control of the lands was precisely what attracted the *jellaba*.

The second factor that agitated the southern Sudanese, i.e. oil, became an issue of conflict when the southern Sudanese realised that their region's newly discovered resource was going to be tapped for the benefit of northern Sudan. Oil was, in fact, discovered in the most contentious zone possible – the frontier of the savannah zone, and this has made the conflict more tenacious. 'The government of Sudan considers oil a national resource while the southerners consider the oil a southern resource' (Goldsmith *et al.* 2002:218). Chevron, which started exploring in south-western Sudan in 1975, had in 1980 located a significant amount of oil north of Bentiu and in the Hijleej fields in 1982 (Goldsmith *et al.* 2002:223). Although the Addis Ababa Agreement gave southern Sudan regional autonomy, which should have given it a stake in the oil explored in its territory, Chevron and the central government formed the White Nile Petroleum Corporation in 1981 without any southern representation (Goldsmith *et al.* 2002:223). The central government's decision to change its original plan of building the oil refinery in Bantiu, in the south, relocating it to Kosti in northern Sudan turned oil into a critical issue (Mohamed Salih 1999:116; 1993, Goldsmith *et al.* 2002:218; Suliman 2000:141-2). This government move was interpreted as a plan to deprive the south of its oil resources and use them for further developing the north (Mohamed Salih 1999:116, Goldsmith *et al.* 2002:218).

Oil has also generated another issue of conflict by involving the regime in a re-design of the borders between northern and southern Sudan, thereby slicing territory off the latter and adding it to the former. Discord has also been provoked by the government's dividing the south into three regions in what southerners consider to be a wicked brand of the old colonial "divide and rule" principle – dividing the south 'into three antagonistic factions' (Deng 2000:161, see Goldsmith *et al.* 2002:218).

Conflict over oil is associated with the stark environmental degradation that occurred in the early 1980s in different regions, which forced the state to look for an immediate source of revenue. This made the oil crucial, and in order to extract it, the state had to resort to a "universal" discourse (religious Islamic) that brought different northern Sudanese together in a "holy war" against southern Sudanese. Thus, the crumbling of the agricultural productive systems in the northern drought-hit regions and the need of the central government (under military junta) for oil revenue were largely behind the religious war it has waged against the south and which continues up to today. In fact, the 1980s witnessed significant changes in the political atmosphere of the Sudan. The dawn of the 1980s saw the introduction of the regional autonomy rules, and in mid-1983 tough legal mea-

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9. A breakaway group from the SPLA/M under the leadership of Riek Machar, which in 1991 signed the Khartoum Agreement with the NIF government.

asures were adopted. In May of that year ‘the SPLA launched its armed struggle against the north, shortly followed by the imposition of *Sharia* law by the Khar-toum regime’ (Goldsmith *et al.* 2002:223). Most importantly, the May (Islamist) regime collapsed in the mid-1980s, and the close of the decade was marked by the takeover of power by the Islamists, signalling the beginning of a total religious war, including to Islamise the south. Oil resources were considered the state’s last resort for restoring an increasingly discredited development discourse. When this became too difficult, the state resorted to a supernatural treatment of the ills of the economy, which were apparent in the lack of material resources. Thus, the militias (the creation of which was the fourth factor that agitated the southern Sudanese) are closely connected to oil and *sharia*. Goldsmith *et al.* (2002:223) state, ‘Chevron attempted to resume operations in 1988 – reportedly supporting a Baggara militia in the region to protect its operations – before withdrawing in 1990 in the wake of the military coup.’

At the same time, oil complicated the relations between the south and the north as it became difficult for northern Sudanese-dominated governments to accept the separation of the south (Mohamed Salih 1999:116). ‘Arguably’, according to Goldsmith *et al.* (2002:218), ‘the *degree of stability* and control enjoyed by the government in the north is at least partially *a function of the southern resources it controls*’ (italics added). However, for the very value attached to it by both sides, oil would mean the continuation of conflict in the savannah zone, adding one more reason for the depopulation of the region (see ICG 2002, 2003a).

The war turned the areas where oil facilities were located into battlegrounds for the government and its allies on the one hand and the SPLA on the other. Thus, while the oil accelerated the impact of civil war, the environmental impact of the latter replicated the effect of droughts. Southerners and northerners on the front lines are expected to undergo increased displacement, again aggravating ethnic conflicts at the national level and overwhelming the downstream RZ.

The above discussion illustrates several significant changes taking place in the landscape of Sudan, which early on showed an aggressive expansion of rainfed irrigation. These changes, however, formed new conditions which have made such expansion rather difficult, if not impossible. This is primarily attributed to communal coalitions inspired by the “southern” resistance/liberation discourse, which was ultimately espoused by almost all marginalised communities in the resource-rich zones.

Capturing the resources of the southern Sudanese as well as of other communities in the rain-belt, took the form of a total religious war and the almost total destruction of whole communities of the savannah belt. This has particularly been the case since the 1989 NIF-backed military coup. Communities which undergone long term “ecological marginalisation” such as the Nuba (people of the Nuba Mountains) and the Angessana of the south Blue Nile resorted to creating their own macro-coalition through joining the SPLA/SPLM. Under the charismatic leadership of Dr. John Garang de Mabior, marginalised groups seemed to

strongly counter-balance the macro-coalition which involves the ruling elite, calling for restructuring the power relations and aspiring for a “New Sudan”.

The determination of marginalised communities to resist the macro-coalition involving the state is informed by the enormity of the looting of their resources. The example of Habila, mentioned earlier, shows how the agribusiness group could capture almost the entire lands of a community.

Given this scale of resource capture, the Nuba resorted to carrying arms, joining the SPLA/M, while their historical co-habitants, Baggara (Arabs), were courted or coerced to side with the government. This has brought to end the historical complimentary and symbiotic relations between different groups (for details see Ahmed 1993:116). According to Suliman (2000:203), the government had persuaded the Baggara tribes to join its war by equipping them with arms and promising them fertile Nuba lands after a swift victory over the latter. Hamid E. Ibrahim (2002:161) points out that this local conflict in the Nuba Mountains had become part of the military strategy and discursive undertakings of the SPLM/A and the government of the Sudan. According to him, these discursive undertakings or ideologies took the form of Africanism/Christianity/Paganism for the SPLM/A versus the ethnicist Arabism (*al-shu'ubeeyya al-'uroobiyya*)/Islamism of the government (Ibrahim 2002:161). Under these circumstances, the declared *jihad* campaigns targeted Muslims and non-Muslims alike (Beswick and Spaulding 2000:xvii) with the ultimate target being the resource niches lying to the south.

The new Holy Terror differed from anything the Sudan had seen before. Newly-created “Popular Defense Forces”, often called militia or *murahilin*, were enjoined to wage a total war against anyone who was not an Arab Muslim. They were given complete freedom to kill, rape, loot, and enslave such people, and above all to expel them from their territories so that these lands might be colonised by Arab Muslim settlers from the north (Majak 2000:49).

This attitude is structural to a religious state which necessarily asserts despotic measures in all fashion. “The idea of creating a monolithic Arab and Islamic society governed by the historical *sharia* law implies ethnic cleansing – the extinction of the diverse cultures and different ways of life of the numerous non-Arab communities” (Duany and Duany 2000:178). This indicates a shift from religious fundamentalism to overt bigotry exercised by the currently ruling Islamist elite (El Zain 2006e). The launching of indiscriminate war against Muslim African Sudanese (the third circle) had practically put them on the side of the demonised non-Muslim African Sudanese (the fourth circle). Even (some) Arab Sudanese (the second circle) have now saw in the ruling elite mere resource looters and they, therefore, tied their cause to the fourth and third circles in their armed fight against the ruling elite – they are reinstalling the Sudan in the Sudanic belt once again.

The south which hosted the earliest resistance of ecologically marginalised groups, recently, negotiating from a powerful position with the military government in Khartoum, has made its first practical step of regaining its resources through effectively curbing the ideological drive which justified the looting of its communities' resources – the *sharia* laws. The Machakos Protocol, 'a provisional "grand bargain"', according to ICG (2003b) 'effectively traded a southern self-determination referendum for Sharia in the North'. This has practically ended a two-century drive to Islamise southern Sudan and to establish the hegemony of the riverain elite. Therefore, it seems to have effectively blocked the "open frontier". The south has now created the atmosphere for addressing all issues related to regaining its communities' resources.

It worth noting that the CPA signed by the government and the SPLM in 2004 did not address the ownership of land and subterranean natural resources; however, the parties agreed to institute a process 'to progressively develop and amend the relevant laws to incorporate customary laws and practices, local heritage and international trends and practices' (GOS/SPLM 2004). However, what is significant and worthy to apply to prospected agreements with armed movements in Darfur and the eastern Sudan, is that the CPA called for the establishment of a national land commission to arbitrate between willing contending parties on claims over land and to sort out such claims. With its decisions binding to arbitrating parties, the commission will abide by what has been persistently violated for decades – it 'shall apply the law applicable in the locality where the land is situated or such other law as the Parties to the arbitration agree, including principles of equity' (GOS/SPLM 2004).

It is worth emphasising that the south has come to symbolise marginalisation and resistance to marginalisation. Several other armed movements in other regions have remodelled and adopted a "southern" discourse in their struggle to regain or defend their resources. Thus, in the eastern region, two rebel movements, namely the Beja Conference and the Free Lions took up arms in the mid-1990s. In Darfur, the year 2003 witnessed the break out of rebellions by the Sudan Liberation Army/Movement (SLA/M) and the Justice and Equality Movement (JEM), resisting marginalisation. Besides these two groups, a new armed rebellion emerged, namely the National Movement for Reform and Development (NMRD), a splinter from the JEM (*SPLAToday.com* 16 December 2004). In neighbouring Kordofan, in western Kordofan State, two new rebel movements emerged, namely Shahama (*Sudan Tribune* 21 October 2004) and the Sudanese National Movement (SNM) (*Sudan Tribune* 27 December 2004), as well as the Sudanese National Movement for the Eradication of Marginalisation (SNMEM), which is suspected to be a splinter from the SLA (*Sudan Tribune* 30 December 2004). It is as yet unclear whether the last two movements in Kordofan are names of or splinters from the first, i.e. Shahama. In the northern region, two movements emerged, namely the Kush Liberation Movement (KLM) (*Sudaneseonline* 02 September 2004), at the core of which are the Nubians, and the Movement for

Doing Justice for the Dislocated People and Building the New Sudan (*Al-Sahafa* 09 December 2004), at the core of which are the Manasir Arabs. The emergence of these armed movements would seem to dramatically redefine the relationship between the downstream RZ and the NRZ as well as relations among groups within these zones with respect to resource accessibility.

#### 4.5 Conclusion

This chapter elaborated on the processes of “resource capture” and “resource marginalisation” in the Sudan and how they generated environmental degradation, caused localised conflicts and displacements, and ultimately aggravated regional conflicts in the Sudan. Noting the potential conflicts embedded in ecological differences, this chapter traced back the origins of what we referred to as the “frontier-cast ideology” and how this ideology relates to a split land-tenure system, which gave land security to a small fraction of society and rendered the resources of the majority state-owned with original owners given mere usufructuary rights. It investigated how this relationship to resources gave excessive power to an agriculturalist lobby which influenced state policies and therefore blocked any sound land reform in the Sudan. It discussed how this ultimately facilitated limitless “resource capture”, leading to marginalisation of large numbers of communities. Evidence was provided about the magnitude of agricultural expansion at the expense of traditional farmers and pastoralists.

This chapter further showed how the “open frontier”, which historically relieved the Nile water from pressure, is now becoming a zone of tempest because of the incredible “resource capture” that proved necessary for the expansion of the rainfed sector. In the “open frontier” it is thus hard to generate any surplus from its abundant “alternative water resources”, either because of environmental degradation or due to the multitude of conflicts. The chapter showed how environmental degradation and conflicts generated water scarcity; just as they led to chronic food insecurity in the NRZ and upstream RZ, which will be elaborated in Chapter 5, they also led to mass population displacement and concentration in the rural areas of the downstream RZ (Chapter 6). These mass population movements and settlements necessitated irrigated schemes for resettlement and food security. Additionally, they caused rapid population concentration in RZ urban areas, which besides increasing the demand for water, threatens to pollute the water available, among other negative consequences (Chapter 7). This aggravates water scarcity by compromising water quality.



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## 5 Ecological Marginalisation and Declining Food Production in the Sudan

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### 5.1 Introduction

This chapter addresses two of the social effects of environmental scarcity, namely decreased agricultural production and decreased economic productivity, particularly in connection with food production in the rainfed zone. It argues that the food security that the Sudan enjoyed for centuries, recently changed into acute food insecurity, especially in the NRZ and upstream RZ. This is taking place despite the expansion of large-scale rainfed mechanised farming, which largely produces cereals. Authoritarian development policies, inherently insensitive to the sustainability of natural resource use, have increasingly jeopardised subsistence food production for the sake of commercial food production. While the latter served as a good alternative for some time, it dealt a *coup de grace* to the former by squeezing it onto fragile marginal lands through persistent “resource capture” and by trapping producers into exhaustive long-distance labour migrations. Turning almost totally *private* since the 1970s, the large-scale food production sector has benefited from state facilities, contributing, as well, to the collapse of the *state’s* modern (irrigated) sector, which became dehydrated by the allocation of capital to the former.

The swift expansion of the rainfed sector has caused severe environmental degradation affecting all economic sectors. Its legacy poses some important questions for Nile hydropolitics – whether Sudan can truly benefit from its “alternative water sources”, i.e. “green water”, and whether these resources can still be considered an option to relieve the Nile waters from pressure. Or, alternatively, we may ask whether Sudan has entered an age of scarcity. The main point that this chapter emphasises is that since the early 1980s, and for the first time in recent history or known, population groups from the NRZ regions of western Sudan and the upstream RZ have become dependent for their food on the downstream RZ. Thus, regions that were considered the abode of and to benefit from the “major alternative to Nile water” are now dependent on the waters of this very river.

The chapter is divided into three sections. Section 5.2 presents a short history of food shortage/famine in the Sudan by comparing causes of earlier famines to recent ones in the RZ and the NRZ. Section 5.3 studies the current food situation

in connection with food production in the modern sector. It examines how efforts at large-scale food production in the modern rainfed sector, which were essentially considered to relieve the Nile from additional pressure, have ended up deepening the food crisis. Section 5.4 focuses on food insecurity in rural areas – the collapse of subsistence economies in the NRZ and upstream RZ. Related to section 5.3, it investigates the extent to which environmental scarcity caused by the expansion of the mechanised farming sector is behind current food shortages/famines in the traditional sector. Basically, it investigates the extent to which the erstwhile surplus-producing NRZ regions and the food self-sufficient upstream RZ regions have become dependent on the downstream RZ for their food.

## 5.2 A short history of food security/insecurity in the Sudan

To start, we shall define the terms “food security”, “food insecurity”, and “famine”, as they are used in this chapter. Food security, according to FAO (2003), ‘exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life’ (see also Hassan 2002:12). Food security is multifaceted, according to the European Commission (EC) (2003:10), and ‘implies the availability and stability of good sanitary and nutritional-quality food supplies on several levels: individuals and households, communities and local, regional and national territories’. However, beyond such physical availability and stability of supplies, food security implies the economic accessibility to food by households and its optimal use, especially by population groups that are identified as vulnerable (EC 2003:10). “Food insecurity” is viewed to take three forms, according to Dessalegn Rahmato (1990:55): malnutrition, critical food shortage but not widespread famine, and famine, whether it is mild or serious. In Rahmato’s view, under the first two situations of food insecurity, ‘it is the rural poor and landless who suffer most, while under the last all sectors of rural society are victimized. Indeed, serious famine will affect portions of the urban population, particularly the unemployed and the low-paid.’ Rahmato is critical of Sen’s argument that famine is “class-specific”, where ‘the poor and the property-less are the most to suffer’. He asserts that Sen’s argument ‘has been proved wrong in the recent Ethiopian famine, where both the haves and the have-nots equally bore the brunt of the tragedy’. He emphasised that ‘whether or not food insecurity will be class-specific will be dependent on its level of intensity’ (Rahmato 1990:56). Being one aspect of food insecurity, however, famine is defined by what precedes it in terms of the other forms. ‘Famine is only an extreme form, or a dramatic manifestation of chronic food insecurity. In other words, famine does not create chronic insecurity, rather it is the latter which gives rise to the former’ (Rahmato 1990:56-7).

Food insecurity in the remote past of Sudanese society, similar to many other societies, was largely caused by natural factors. However, in the period under study it seems that food insecurity was attributable largely to socio-economic and political factors – regimes of structural inequality and environmental scarcity. The colonial expansion in the nineteenth century, by upsetting the population distribution (Chapters 7 and 8), disturbed the existing forms of economic and social organisation. Like most radical changes in human history, the penetration of modernisation with the advent of the Turkish rule in the Sudan caused radical ruptures in the indigenous systems of production with far-reaching consequences in the field of food production. Significantly, it undermined the local production systems and subjected the rural population to unprecedented crises.

Following the Turkish invasion, famines and food shortages probably became more frequent. The disruption of populations was so enormous that famines were only natural. As Table 5.1 shows, since the *Um Lahm* famine in 1684 and until the Turks colonised Sudan there is no major famine on record. The mid-1830s, i.e. 15 years after the coming of the Turks, marked the beginning of frequent famines in the Sudan. The central RZ, for example, underwent famine for the three years between 1835 and 1838. The slave trade appears to be a major cause of famine during this era. It is important to note in relation to slavery and its effect on subsistence economies that not only did the slave trade deprive households of productive able-bodied members, but it also induced geographical ecological marginalisation. Certain communities no longer ventured into new fertile niches out of fear of being captured. This allows us to say that slavery established long-standing causes of vulnerability to famine; it thus, redefined spatial accessibility and population distribution. Communities such as the Nuba and the Shilluk must have experienced acute decimation of their populations (Chapter 6) due to famine resulting from a shrinking cultivated area. Similarly, in the north, where groups remained on the alert to escape the cruelty of the Turkish regime, it is hard to imagine a settled peasant community capable of sustaining its livelihood, let alone meeting the livelihood needs of other non-grain producers.

Food insecurity was replicated even further, by the end of the nineteenth century, during Mahdism, when at least two famines occurred. In 1885, i.e. at the very beginning of the Mahdist rule, central and eastern Sudan witnessed a slight famine. Three years later, the notorious nation-wide *Senet Sitta* famine struck between 1888 and 1889, claiming the lives of hundreds of thousands. In 1890 the downstream RZ underwent the impact of famine, as locusts and mice consumed the harvest (Table 5.1). However, the frequency of famines increased even further following the British invasion.

With the coming of the British, conditions remained ripe for famine for quite some time. In resistance to the invading troops, many households lost able-bodied members who had produced food grains or earned cash, given that the factions of the Sudanese resistance were volunteers without an institution for payment. No less that three famines with wider areal scale took place. Fifteen

Table 5.1: Years of famines and drought in the Sudan (1684-2002)

Years of drought or famine	Name and damage	Area Extent	Source
1684	"The Great Famine" (Um Lahm)	Sinnar region	O'Fahey and Spaulding (1974)
1835-38	"Years of famine"	Central Sudan	Hill (1970)
1836	Cholera spread through country	Central Sudan	Hill (1970)
1885	Slight famine	Central and eastern Sudan	Al-gadai (1983)
1888-89	Hundred of thousands died No rain for a year, crops failed and grain became increasingly scarce. Prices rose to US \$40 and then to US \$60 for two sacks of dura (sorghum). People sold their children as slaves to save their lives and later bought them back at higher prices.	Central, northern, eastern and western Sudan	Slatin Pasha (1896)
1888-89	Thousands died of hunger and disease	Central, northern, and eastern Sudan	Duncan (1952), Farwe (1967), Churchil (1899), Holt (1970)
1888-89	Locusts and mice consumed produce	Central, northern, eastern and western Sudan	MacMichael (1934)
1890	Poor rain, corn brought from India and issued free of charge in distressed areas and cheaply elsewhere	The Nile area	Farwell (1967), Duncan (1952)
1913	"The year of the floor" (floor brought from India because of poor rains)	Mainly northern Sudan	MacMichael (1934)
1914	Kurbajet.	Central Sudan	Honderson (1965)
1920-21	Slight famine	Eastern Sudan	Egeimi (1996), Krzywinski (2001)
1927	Fouliya	Central and eastern Sudan	Al-Gadai (1983)
1940-41	Sirar Hoyokoiya	Eastern Sudan	Egeimi (1996), Krzywinski (2001)
1947-49	American	Eastern Sudan	Egeimi (1996)
1958-60	Food shortage	Eastern Sudan	Egeimi (1996)
1967-68	Kiloiate	Eastern Sudan	Mohamed Salih (1999:59, 1992:14-15)
1970-72	Ifza'unna, food shortage	Eastern Sudan	Egeimi (1996), Krzywinski (2001).
1973	El-Khawaga (eastern Sudan), (western Sudan), 250,000 died	Darfur	Markakis (1998)
1984/85	About half of the 26 million people suffering from hunger	Darfur, Kordofan and the eastern region	Haug (2000)
1988-1991	War-induced famines. 1.5 million died	Western and Southern Sudan	F. Ibrahim (1991)
1991-1999	War-induced famines	Southern Sudan	Mohamed Salih 1999
1994-2002	War-induced famines		Goldsmith et al. (2002:217).

Source: rows 1-11 and 13 Teklu, et al. (1991:26).

years after the occupation, i.e. in 1913, the first famine with larger areal extent took place, followed by a second one in 1914, and a third in 1927, respectively, in the downstream RZ; the central RZ; and in the central RZ and eastern Sudan (NRZ). Famines continued to feature in the country until the late 1940s, though localised ones. At least three hit the NRZ eastern region. Eastern (NRZ) and northern Sudan (downstream RZ) experienced more famines than western Sudan (NRZ) (Table 5.1). The literature makes no mention of famine in southern Sudan during this period and the region is considered largely food-sufficient.

The systems of production based on indigenous knowledge of agro-pastoralists or pastoralists, which sustained the livelihoods of these groups (Ahmed 1994:57), were disrupted and finally halted. However, although famine symptoms were increasingly felt at the *local* level, particularly, in eastern Sudan after the early 1920s it is to be noted that, since the slight famine that occurred in 1927 in the downstream RZ and NRZ eastern region, no other famine on *national-scale* took place until 1984.

### 5.3 Current food situation in the Sudan

In recent decades, Sudan has become chronically food-insecure. The direct cause of this food insecurity, according to Markakis (1998:83), 'is low and falling food output per capita, the result of stagnant or low agricultural production growth in the subsistence sector'. Markakis relates that the agricultural production growth rate for Sudan, which was 2.9 per cent per annum during 1965-80 fell to 2.7 per cent during 1980-88. Taking the year 1979/80 as base year, he notes that the average index of food production per capita fell to 89 per cent in 1988 and that the daily average calorie intake fell from 2,213 in 1969/71 to 1,785 in 1991 (Markakis 1998:83). Food shortages started to become serious particularly in the 1980s (Ibrahim 1991, Suliman 2000). Compared to other countries with chronic food insecurity, Sudan is no better. Sudan's average annual growth rate in per capita food production for the period 1979-93 was -2.2, while that reported for the same period for Ethiopia was -1.2, Kenya -0.4, and Somalia -6.0 (Markakis 1998:83). This has translated to an increased dependency on foreign sources of staple food - Sudan's dependency ratio increased significantly from 10.5 in 1981 to 27.7 in 1989 (Markakis 1998:85). Clearly, the production process reflected the social effects of environmental scarcity. As Table 5.2 and Table 5.3 suggest, despite the increase in total area under sorghum and millet (irrigated, mechanised, and traditional sectors), both production and productivity decreased (as we shall detail later).

Viewed in the context of its neighbours, Sudan is, actually, a latecomer to the club of countries suffering from hunger and food shortage. Sudan escaped the ravages of the famine that devastated the Sahelian countries in the 1960s and 1970s because its leading economic sector had produced food for internal markets rather than for export (O'Brien 1985:23-4, Suliman 2000, see El Tom

Table 5.2: Average area, production, and yield of sorghum

Season	Irrigated			Flood			Rainfed mechanised			Rainfed traditional			Total		
	Area (000 fed.)	Prod (000 tons)	Yield (kg/fed.)	Area (000 fed.)	Prod (000 tons)	Yield (kg/fed.)	Area (000 fed.)	Prod (000 tons)	Yield (kg/fed.)	Area (000 fed.)	Prod (000 tons)	Yield (kg/fed.)	Area (000 fed.)	Prod (000 tons)	Yield (kg/fed.)
Average 10 years	479	212	443	59	20	333	3727	1152	310	2932	670	225	7144	2034	285
1974/75-83/84	666	369	596	100	40	400	4534	389	86	2687	272	101	7987	1097	137
84/85	1021	525	514	102	43	421	8537	2328	273	3495	609	174	13155	3595	273
85/86	758	414	546	64	40	625	8190	2395	292	2793	428	153	11805	3277	278
86/87	658	333	506	53	31	585	5315	853	160	2043	158	77	8069	1363	169
87/88	726	412	567	120	56	467	9747	3317	340	2686	640	238	13279	4425	333
88/89	715	375	524	40	17	425	5830	853	146	2464	291	118	9049	1536	170
89/90	898	484	539	32	32	1000	4080	540	132	1560	124	79	6570	1180	180
90/91	1312	851	649	64	35	547	9165	2428	265	1600	267	167	12141	3581	295
91/92	1114	670	601	107	99	925	10041	2687	268	3500	586	167	14762	4042	274
92/93	816	548	672	88	54	672	7896	1473	187	2358	311	132	11152	2386	214
93/94	868	498	574	77	45	580	7334	1726	235	2519	369	146	10797	2648	245
Average	+81.2	+134.9	+29.6	+30	+125.0	+74.2	+96.8	+49.8	-24.2	-14.1	-44.9	-35.1	+50.9	+30.2	-14.0
%															

Source: GAPS (2000:7, Table 1).

Table 5.3: Average area, production, and yield of millet

Season	Irrigated (flood)			Rainfed mechanised			Rainfed traditional			Total		
	Area (000 fed.)	Production (000 tons)	Yield (kg/fed.)	Area (000 fed.)	Production (000 tons)	Yield (kg/fed.)	Area (000 fed.)	Production (000 tons)	Yield (kg/fed.)	Area (000 fed.)	Production (000 tons)	Yield (kg/fed.)
Average 10 years												
74/75-83/84	13	5	412	5	1	200	2711	407	150	2729	413	151
84/85	20	10	500	11	1	91	3095	147	47	3126	158	51
85/86	22	7	300	105	20	189	3939	401	101	4108	428	104
86/87	15	5	300	71	11	155	1320	99	75	1406	115	82
87/88	13	4	300	36	6	167	2560	143	56	2609	153	59
88/89	13	4	300	153	24	157	5512	467	85	5678	495	78
89/90	6	1	166	139	18	129	1667	65	39	1812	84	46
90/91	-	-	-	25	5	200	1550	80	52	1575	86	54
91/92	7	2	225	136	25	184	2520	281	111	2663	308	116
92/93	11	4	360	189	47	249	3510	398	113	nnn	449	121
93/94	2	1	300	162	27	166	2381	193	81	2545	221	87
Average	11	4	364	103	19	180	2810	221	79	2923	243	83
%	-15.4	-20	-11.7	+1960	+1800	-10	+3.7	-45.7	-47.3	+7.1	-41.2	-45.0

Source: GAPS (2000:9, Table 2).

1987:150). Sudan was one of two cases (the other was Botswana) out of 35 sub-Saharan African countries, which in the periods 1961-65 and 1976-80, 'showed a substantial growth in per capita food production at the expense of export crop production' (O'Brien 1985:26). Save the food shortages/famines that took place in the NRZ eastern region, and the food shortage of the late-1960s and early-1970s, Sudan went for about six decades without a famine (Table 5.1). 'Generally, the Sudan used to have surplus most of the years of sorghum, exporting more than 500 thousand tons annually' (Faki *et al* 1995:458, see also Suliman 2000:124, Barnett 1988).

In 1975, and because of its agricultural potential, 'the Sudan was hailed as the potential breadbasket to feed the Arab World' (Shazali 2000:103, see also Mohamed Salih 1999:59, Suliman 2002:124, Barnett 1988:4, O'Brien 1985:29). Subsistence economies for some time operated productively under the shadow of the dominant mechanised farming sub-sector, and farmers maintained their own food surpluses, which they stored for short-term food shortages (Markakis 1998, O'Brien 1985:26-7). Though Sudan used to have 'more or less a balance in millet', during this same period it faced a great deficit in wheat (Faki *et al.* 1995:458). Probably, it was because of this balance in sorghum and millet that Sudan maintained relatively dispersed population settlements, as Waterbury (1979:9) described, in contrast to Egypt's concentrated settlements along the Nile banks.

During the good days of expansion in food production, the government in Sudan pursued policies 'toward diversifying production in the irrigated schemes – including growing more import substitution elite food crops such as wheat and rice' (O'Brien 1985:29). The government by 1969 was 'trying to move away from complete reliance on cotton as a cash crop' (Davies 1991a:112). It is to be noted that while sorghum represents the staple food for the majority, millet is largely consumed in rural areas, especially in western Sudan (NRZ) and wheat is mainly a staple food in urban areas and in the arid RZ (Chapter 8). The large-scale production of sorghum has often provided a substitute for wheat and in some seasons for slight shortages in millet. With the exception of 1967/68, this provided a shield against food gaps or famines after independence and until the early 1980s.

### 5.3.1 Food production in the modern sector

Agricultural development in the rainfed zone in the Sudan from the 1940s up to the early 1970s gives credibility to the notion entertained by Egypt that Sudan should bet on its rainfed zone to relieve the Nile from pressure (Chapter 1). The success achieved in rainfed agriculture, especially in food production, however, was an outcome of a number of factors, the abundance of rains being only one among them. The good luck of Sudan and its being a rare case in escaping the ravages of the Sahelian famine of 1968-73, according to O'Brien (1985:23), 'did not result from favourable rains in Sudan'. The conditions responsible for this good

fortune, according to him, 'derived from a pattern of agricultural development during the 1960s which was rare in Africa and indeed in the entire Third World, based as it was on the expansion of the capitalist food production supplying internal markets rather than on expansion of export production' (O'Brien 1985:23-4, Suliman 2002:123).

This, actually, characterised all agricultural production in the country, where throughout the 1950s and 1960s, internal structural changes as well as external factors contributed to generate such conditions. 'The large-scale expansion of domestic food production in Sudan', according to O'Brien (1985:24), 'got its start with the political ascendancy of the agrarian bourgeoisie following independence and the concurrent decline in profitability of the cotton-producing, pump-irrigated agriculture which had served as the basis of the initial accumulation of capital in Sudanese agriculture in the colonial period'. In fact, expansion of mechanised farming caught an important opportune. 'In line with the interests of the ruling coalitions and on the advice of the World Bank, government economic policies came to support more and more commercial and large-scale mechanized agriculture' (Ahmed and El-Battahani 1995:203). This coincided with a recession in the world cotton market which, according to O'Brien (1985:24), 'set in during the late 1950s threw into sharp relief the disadvantages of having [a] large amount of capital tied up in the infrastructure of irrigated agriculture. In this context agrarian capitalists began to search for more favourable investment opportunities.' In his view, mechanised sorghum production in the central rain lands, partially, provided an equal opportunity (see Abdelkarim 1992:23).

This pattern involved low levels of the fixed investment and ecologically damaging cultivation practices which produced high rates of profits' (O'Brien 1985:24). Through its increasing control of the government, the agrarian bourgeoisie used the state facilities to aid the private rainfed mechanised agriculture to the extent that, by the mid-1960s, this sector dominated capitalist growth in the Sudan (O'Brien 1985:24-5, see also Suliman 2000). This support in itself had yet to reinforce the dominance of this sector (Chapter 8). Throughout the 1960s, the government maintained rather close attention to the food situation. Thus, besides the food reserves, it intervened in stabilising grain prices and, after the food deficit of 1967/68, it proved able to import sorghum from China (Gibriel 1981:27).

#### *Environmental scarcity and sinking into chronic food insecurity*

The grain balance and concomitant population redistribution had changed by the beginning of the 1980s. 'Frequent years of drought during the 1980s have jeopardized the dependable supplies of sorghum and millet from rainfed areas' (Faki *et al.* 1995:458). They even caused the 1984/85 famine (see Table 5.1) and, thereafter Sudan was haunted by the spectre of famine. 'Wheat imports, amounting to three quarters of the annual needs, have exerted a heavy burden on the Sudan's meager and deteriorating foreign exchange resources, and involved a worsening

of its negative trade balance' (Faki *et al.* 1995:458). In their analysis of the symptoms of poverty in Khartoum, Ahmed and El-Battahani (1995:196-7) point out an emerging symptom in the late 1970s, namely rationing, including commodities such as oil and, importantly in connection to this chapter, bread and sugar. 'Foodstuff rationing and inflated prices have also hit business, and all this has worked towards further impoverishment of people's quality of life' (Ahmed and El-Battahani 1995:197). While foodstuff rationing in urban areas kept the famine at bay by maintaining some form of accessibility, in rural areas by 1985 'millions of Sudanese failed to access food. Widespread famine conditions prevailed in many parts of the country and the problem of food accessibility was the severest in Eastern and Western Sudan' (Shazali 2000:103).

The food situation in the Sudan during the post-independence period poses some rather irresolvable puzzles. 'Despite a steady increase in the area under cropping, Sudan has experienced acute food shortages twice in less than two decades – 1967/68 *food deficit* which prompted further expansion of the large-scale mechanised schemes, and the 1984/85 famine crisis which attracted the world's attention' (Mohamed Salih 1999:59, 1992:14-15, italics added). What is more puzzling is the persistence of famine, for now almost every next year there is a famine or "food gap", as is conceived in the official circles. 'The international humanitarian community launched a massive famine relief operation between 1985 and 1987, and have since then continued interventions in Eastern Sudan' (Shazali 2000:103). Western Sudan too is undergoing drought-induced famine, replicated by another repercussion of environmental scarcity, i.e. the so-called "armed banditry" that lately took its proper name and character as full-fledged armed rebellion. In recent years, however, it is the upstream RZ (southern Sudan) that suffered most of the famines. Due to widespread displacement, people in this region have depleted their sources of traditional livelihood; hence, large portions of the population have become dependent on food aid (Mohamed Salih 1999:47). 'Instead of achieving some sound results from an agricultural policy which was designed to make Sudan the breadbasket of Africa and the Middle East, Sudan suffered a major setback in food production' (Mohamed Salih 1999:59). Promises of food abundance were replaced by "belt-tightening strategies" (see Ali 1994).

The other puzzle relates to the regions hit by famine, Kordofan, Darfur and the Eastern region. The economies of the NRZ regions of Kordofan and Darfur were showing increased competence until late-1970s. 'By 1978 the share of export produced in the West [Kordofan and Darfur] had increased to about 33% of the total. Almost all this is produced by small farmers, and has undoubtedly increased since 1978 as production on the central irrigation schemes has declined' (Shepherd and El Neima 1981:11, for more details see Markakis 1998:90, Ahmed 1987:142, O'Brien 1985:26-7).

Some external and internal factors have generated the situation of food insecurity in the Sudan; yet both were/are operating within a context of giving priority to

cash crops and, as a corollary, undermining cereals production both during colonial and post-colonial times. Agricultural development during the colonial period, according to Barnett (1988:3), was designed to serve Britain's interests, where cotton mono-cropping took precedence over most other modes of agricultural change (see also Sørbo 1985:23). Yet, as noted above, after 1927 no famine took place, meaning that for about three decades before the British departure, food security was largely the norm.

External factors had significant influence internally, particularly by replacing the dominance of the agrarian bourgeoisie with that of the commercial bourgeoisie. Essential to this change was the long reign of President Nimeiri (1969-85) during which several significant transformations took place (see O'Brien 1985:29-30). Nimeiri's 'signing of the Addis Ababa Agreement which ended the war in the South, and his ousting of his communist supporters and allies in the early 1970s, brought stability and established Sudan as an ally worthy of supporting and maintaining, from the West's point of view' (Brown 1986:152, 1988). The pro-West Nimeiri would now also be more appealing for conservative Arab regimes, who, though insignificant regional players came to dramatically reshape Sudan's economy and polity.

In the early 1970s, the Sudanese government and also many of the governments of the Gulf states, notably those of Saudi Arabia and Kuwait, saw the country as the potential grain basket of the Arab world – a path out of the dependence by the Gulf states on imported food supplies, notably from the United States (Barnett 1988:4, O'Brien 1985:29).

By mid-1970, when Sudan was described as the breadbasket for the Arab world, policies for westward expansion of mechanised farming were adopted, using unlimited loans made available from Arab oil funds (Suliman 2000:124).

As is often the case, the advice of Sudan's Western friends focused on what could enhance the country's exports. 'Beginning about 1972, the World Bank became more insistent in pressing its argument about Sudan's "comparative advantages" lying in cotton production for export and against the policies which the government had pursued toward diversifying production in irrigated schemes' (O'Brien 1985:29, Suliman 2000:124). In the irrigated sector, cotton regained its former superiority of receiving increased emphasis while important food producing branches received little attention (Adam 1987:25). Parallel to this, in the rainfed sector, the World Bank encouraged the large-scale sorghum production and maintained that encouragement until the late 1970s. Ruling elite interests, in line with the World Bank policy, gave increasing support to commercial and large-scale mechanised agriculture (Ahmed and El-Battahani 1995:203, O'Brien 1985). Chapter 3 detailed the expansion of this sector.

Now concerned with rehabilitating and reorganising the Gezira and other cotton-exporting irrigated schemes, the World Bank by 1978 withdrew support from

expansion of mechanised farming (O'Brien 1985:29). That same year, i.e. 1978, the International Monetary Fund (IMF) implemented its stabilisation plan in the Sudan, and by 1984 the Sudanese pound declined in value from US \$2.87 in 1978 to less than half a dollar, and the standards of living of urban workers and rural producers were sharply diminished (O'Brien 1985:29, Cheru 1989:112). Despite the fact that the disposable income of the average Sudanese peasant dropped to 30 per cent of what it was in 1970 (Cheru 1989:112), the IMF's role in the Sudan continued even more aggressively. This was in fact because such a situation made the Sudan more receptive to IMF prescriptions. Political stability in the Sudan and its pro-Western stance was, according to Brown (1986:152), 'the main *raison d'être* of the role of the IMF and the Consultative Group member countries' economic support to the government of the Sudan since 1978' (underline original, see also Brown 1988). To this extent, the IMF involved the Arabs in providing incentives and exerting pressures that would reshape the opportunity niche of the Sudan. 'Arab oil exporters agreed to guarantee Sudan's mounting debts and provide short-term balance-of-payments support and development aid in return for Sudan's acceptance of the stringent terms of the IMF stabilisation plan and Arab access to Sudan's agricultural resources for direct private investment' (O'Brien 1985:29).

It is worth mentioning here that the government, as initiator of mechanised farming and, to some extent, contributor to its fast growth (Gore 1987a:91), saw its role diminished in a period of feverish attempts to involve international agribusiness and Arab capital (Ali 1988). Since this sector was expanding terrifically, it is perhaps important to note who was behind the expansion. According to Paul Wani Gore (1987a:91), 'The role of the government in mechanized farming has diminished very considerably during the last few years as most government farms have been sold to merchant farmers or to the oil-rich countries in the Gulf.'

Interventions by the World Bank, IMF, and the Arabs had a double impact in connection with generating food insecurity in the Sudan; firstly, by lifting the support given to mechanised farming, as pointed out above, and secondly, by opening the door wide to exporting sorghum. 'In order to gain foreign exchange, Sudan abandoned an earlier policy of maintaining "strategic sorghum reserves" at the national and provincial levels' (Markakis 1998:91). Thus, in 1981 sorghum occupied the third rank in Sudan's exports and by 1982 it came second (Suliman 2000:124). 'Sudan exported sorghum to Saudi Arabia, enticed by generous subsidy offered by the importing country, which uses sorghum as stockfeed to build up its own animal production' (Markakis 1998:91). The fact that for a metric ton of Sudanese sorghum the Saudis paid US \$220, while they paid US \$170 for an equivalent of a Thai sorghum, was the reason for the increase in sorghum exports in 1982 (Suliman 2000:124). While the Saudi subsidy provided a good incentive, it had, actually, been accompanied by pressure from the IMF in Sudan's government to sustain sorghum exports even during the years of famine 1982-85. During this period, Sudan exported 621,000 metric tons (Suliman 2000:124, see Faki *et al.* 1995:458, Hassaballa and Eltigani 1995:28). This continued even dur-

ing the famine that followed later. In 1991, according to Fuad Ibrahim (1991:339), Sudan exported 'more than two million tons of sorghum from the good harvest of 1988/1989 to be used as animal feed in Saudi Arabia and the Gulf countries, despite the warning of an impending famine disaster when the rainfalls failed in 1989'. The "export zeal" also boosted another sub-sector, namely the sugar production sector. In this respect, it is rather surprising to note that the Sudan since the mid-1980s has produced more sugarcane than all cereals combined (for detailed figures see Markakis 1998:97).

In line with these policies, not only sorghum was decreasing in supply in internal markets, but also wheat – the RZ staple food – underwent a similar change. Before structural adjustment policies (SAPs) were implemented, Sudan provided for 48 per cent of its needs of wheat; following SAPs (1978-87) this declined to 28 per cent (Suliman 2000:124). This was a direct consequence of the IMF's bias against wheat, where the production of the latter was considered to dampen production of lucrative export crops such as cotton (Suliman 2000:124).

A third impact of expansion of mechanised farming, which was probably more damaging to food security was the continued "resource capture", which reduced the acreage available for traditional farmers. The "positive" contribution of mechanised farming to maintaining an internal regime of food production and at the same time maintaining this at the subsistence economy level by providing seasonal labour turned into livelihood disasters. This was mainly due to environmental degradation caused by mechanised farming (Chapter 4). 'The effects of incorporation of rural populations into the wage labour force and the growing encroachment on their lands by spreading capitalist agriculture began, by the mid-1970s, seriously to inhibit the ability of the rural masses to meet their subsistence needs, especially for food, through their own direct production' (O'Brien 1985:27). What was previously an open space for expansion now incurred punishment for those who intruded, or, at least, the "intruders" were evicted through the use of the state's oppressive apparatus, as pointed out in Chapter 4. This took land from traditional farmers and even from potential national mechanised farming investors, extracting produce to outside the area and even outside the country altogether. 'Saudi and other Arab capital, mainly private, took over further expansion of rain-fed mechanised farming with the aim of using the sorghum and other products to feed livestock and poultry for export to oil-producers markets' (O'Brien 1985:29). Areas taken for this purpose were enormous and leased for a period of several generations. 'Saudi Prince Mohamed el Faisal has a 99-year lease on 1.2 million acres in Blue Nile Province, and other concessions to foreign investors have reached several million additional acres. Mohamed el Faisal's Islamic Bank has also become one of the most profitable in Sudan' (O'Brien 1985:29).

The point to be made from the above discussion is that the World Bank, the IMF, and Arab capital paved the ground for "toppling" the agrarian bourgeoisie and replacing it with the commercial bourgeoisie. While the former is considered to have entrenched the tradition of investing in agriculture (see Suliman 2000),

therefore, producing food, the latter is viewed as being rather indifferent about this “mission”. From within this indifferent mission, an Islamist agricultural lobby cropped up, which would displace or accommodate according to its terms almost all segments of the commercial bourgeoisie. This lobby increasingly resorted to extra-violence, including *jihad* campaigns to capture more prime communal lands for its new lucrative business. Another major impact, especially in connection to Arab finance, or, strictly speaking, Islamic finance was the rise to dominance of a faction of the commercial bourgeoisie with strict religious inclinations. This would effectively destabilise the Sudan for the next two and a half decades. This leads us to the discussion of the internal factors behind food insecurity in post-independence Sudan.

The agricultural potential of the Sudan combined with the Arabs’ need to tap this potential has yielded the worst of possible results. Ideological commitment to the Arab region mixed with the entrenched “frontier-cast ideology” driving the *jellaba*’s interests resulted in large-scale ecological marginalisation and agony. The internal factors are much related to the external one. The open-door policy, which started in 1972, caused significant transformations among the *jellaba* groups, where a shift in focus from the internal market to the external occurred (Suliman 2000:124). The open-door policy, as Barnett (1988:7) suggests, implies taking into account both internal and external forces which contributed to the policy in the first place. He considers these, in general terms, to include ‘the impact of the 1973 oil price rise and the need for recycling of OPEC surpluses both regionally and internationally, and in particular in relation to the Sudan, within an ideology of Afro-Arab Cooperation and a pan-Arab strategy’. However, although the foreign influences played an important role, according to O’Brien (1985:29),

[T]he reorientation of the Sudanese agriculture during the 1970s and 1980s was not simply imposed on the Sudanese. The combined crises resulting in the early 1970s from the policies pursued by the hegemonic agrarian bourgeoisie brought about intense internal struggle among the fractions of the Sudanese bourgeoisie and their allied power blocs. Foreign intervention gave a decisive advantage in these struggles to the import-export oriented commercial bourgeoisie, which captured control of the state by 1972 and has been gradually – and not without spirited opposition – consolidating its hegemonic position since, through altering government policy (e.g. the landmark 1972 Investment Act liberalising conditions for foreign investment) and establishing itself as the commercial agents in Sudan of big foreign Arab capital (see also Barnett 1988:7, Elhassan 1988).

It is in connection with the food needs of the latter that the Sudanese commercial bourgeoisie maintained its reorientation. Supplying food for the Arabs ‘would have entailed a change in agricultural strategy, away from a long-term emphasis on the production and export of cotton, gum arabic and groundnuts, towards greatly increased food production, geographically more widely distributed, but even so, still predominantly for export’ (Barnett and Abdelkarim

1988:4-5). Alternatively, the state would have enhanced food production simultaneously with maintaining its export sector. However, due to pressures of international financial institutions and ideological allegiance to the Arabs, the ruling elite started to dig its own grave.

The major structural change that the take-over of the state by the commercial bourgeoisie implied was a shift from an articulated peripheral capital accumulation to a dis-articulated one. Capitalist expansion in the Sudan during the 1960s, according to O'Brien (1985:30), 'occurred on the basis of a pattern of articulated accumulation in the sense that the leading sectors of the economy, under the control of the hegemonic fraction of the bourgeoisie, produced for and therefore made their profits from the internal mass market'. In his view, under such conditions, famine would not be allowed to occur, as it 'represents the collapse of the purchasing power and is thus very bad for the business'. Showing a rather logical *modernisation* process, the system caters for its profit-generating channels, therefore, necessarily the welfare of those engaged in the production process. Towards the latter, the import-export oriented bourgeoisie would exert a different attitude, structurally seen through the window of dis-articulated accumulation. The latter, in the words of O'Brien (1985:30),

[S]tands in stark contrast, because the welfare, or lack of it, of the producing population has little direct impact on the profitability of export production. The logic of capital accumulation within such a dominant pattern thus leads to the marginalisation of producers as consumers; profitability within the system does not depend in a significant way on the purchasing power of the domestic workforce. Wages figure only as a cost of production which can be kept as low as prevailing social and political conditions allow without damaging profitability in marketing the products.

This was the period of systematic impoverishment of the wider masses of the Sudanese people (see Ali 1994); yet it was also the period of fattening the pockets of the commercial bourgeoisie, namely the avaricious Islamist bourgeoisie faction. Mohamed Suliman (2000:148) points out that despite their strong communal linkages, the leaders of the fundamentalist (Islamist) movement in the Sudan entertained an explicit bias against rural areas.<sup>1</sup> They adopted ways of accumulating large amounts of wealth that were strange to the Sudanese context, especially investing this wealth to generate quick revenue. Rural producers were the ones to bear the heavy burden of this orientation. In the 1980s they became more vulnerable to droughts of lesser magnitude than previous ones (we shall come back to this later).

While the 1980s drought played a major role in displaying the symptoms of famine in local economies, in fact the national economy in general showed signif-

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1. Interestingly, Beck (1998:262), while referring to the Mahdist legislation, which represents the precedence for the current Islamists, states that 'an urban style was propagated.'

icant decline, both in the modern and the subsistence sectors. This decline is clearly reflected in poverty indicators, which have shown worsening rates in recent decades. In the period between 1968 and 1978, poverty was of a relatively limited nature, with its rate in a whole decade's time increasing from 52 per cent in 1968 to 54 per cent in 1978 (Ali 1994:84). A drastic leap, however, occurred especially in association with SAPs implementation. Thus, by the end of the period between 1978 and 1986, which witnessed SAPs implementation, poverty registered 78 per cent (Ali 1994:84). Recent official documents show even higher rates. According to the Centre for Strategic Studies (CSS) (1997:322), 95 per cent of the population currently lives in poverty. Whereas the poverty gap indicators in the period 1968-78 showed a decreasing rate from 25 per cent in 1968 to 23 per cent in 1978, during structural adjustment, i.e. 1978-86, there was a drastic increase to 45 per cent (Ali 1994:84). This increase continued in the 1990s, when it reached some 70 per cent (CSS 1998:360).

The policies adopted by government dealt a blow to its major export sector. Since the mid-1970s, when the World Bank and the IMF became direct partners in designing the state's policies, especially those in the agricultural sector, the situation deteriorated decisively (Suliman 2000:123). Thus, by the mid-1970s, the relatively balanced performance of the national economy ended, marking the start of two decades of imbalances and crises (Ahmed and El-Battahani 1995:203, O'Brien 1985).

The policy of paying greater attention to sorghum production had reduced Sudan's ingenuity a great deal. 'One important implication following from the very large expansion in capitalist mechanized agriculture was the gradual reallocation of resources away from the irrigated cotton sector' (Ahmed and El-Battahani 1995:203, O'Brien 1985). Interestingly, it is in the latter that the World Bank considers Sudan's comparative advantage to exist, as pointed out above. 'Starved of resources, the export sector (irrigated cotton schemes) declined' (Ahmed and El-Battahani 1995:203, O'Brien 1985). Yet what made things worse was not only that the yield of these irrigated schemes was declining, but also they were made to carry the burden of sustaining the state, indirectly sustaining the functioning of the private sector of mechanised farming. The decline of their yields caused a decline in export revenues, which the government sought to compensate for by increasing taxes on exports. 'As a result, the total implicit rate of taxation of cotton, the principal export, rose to 26 per cent in 1972/73 as compared to an implicit tax rate on sorghum, the principal crop produced by private capital and marketed internally, of 12 per cent in 1972/73 and 10 per cent in 1974/75' (O'Brien 1985:25, Ahmed And El-Battahani 1995:203). Through both direct and indirect means, the export sector (cotton) was being made to bear the burden of an expanding state bureaucracy, which was paradoxically biased at that very moment towards the other agricultural sub-sector, i.e. rainfed capitalist agriculture (Ahmed And El-Battahani 1995:203, O'Brien 1985:25).

For nearly two decades the Sudanese economy showed a steady decline, which undermined its ability to finance imports (Markakis 1998:91). Modern agricultural development, namely its leading Gezira Scheme, was described as “illusion of development” (Barnett 1977), or even more assertively, state agricultural policies were described as “cultivation of hunger” (Ali 1989). When Barnett’s *The Gezira Scheme: An Illusion of Development* appeared in 1977, according to Sørnbø (1985:24), ‘it was clear to all that the Gezira Scheme, as well as others in the Sudan modelled on it, was in severe crisis’. Thus, despite the World Bank arrangements we noted above, ‘*Cotton production began to decline* and reached a level about one third of that reached in the early 1970s, and the *decline pertained also to other crops grown in the [Gezira] scheme*’ (Sørnbø 1985:24, italics added). The years following the 1984/85 drought showed a permanent decrease in area cultivated under irrigated cotton. By the 1993/94 season, this area had declined by 32.9 per cent and production by 17.8 per cent. Rainfed cotton witnessed even more dramatic decreases, with its area decreasing by 63.6 per cent and production by 35.3 per cent (Table 5.2). The overall area under cotton, by the 1993/94 season, decreased by 37 per cent and its production by 17.8 per cent from the averages for the 10 years before 1984/85 (Table 5.4).

Outside the triangle of development, the practice of modern agriculture in the Nuba Mountains, for instance, was described as having ‘distorted the traditional pattern of crop production without offering an appropriate alternative’ (Mohamed Salih 1987:117). Despite the discursive power of modernisation, in the Nuba Mountains, average yield per *feddan* in the traditional sector proved to be much higher than that of farms involved in the modernisation programme (Mohamed Salih 1987:115). We should note here the concomitant relationship between behaviour in cotton production and other crops. But before that we should mention that during this period, in the modern agricultural sector such as the example of the New Halfa Scheme, tenants were struggling with low and erratic yields, as well as reduction in their acreage because of serious shortages of water (Sørnbø 1985:24). The latter was largely caused by sedimentation. ‘The overall impact of the IMF economic management in Sudan has been the strengthening of the structural problems which inhibited autonomous development’ (Cheru 1989: 112).

Such deterioration made it hard to compensate for the decline in the subsistence sector, and moreover, dried up the sources of possible funding for transporting food from other surplus regions to the famine-stricken ones. There is evidence that the rapid urbanisation, which gave momentum to expanding the sorghum-producing areas (Chapter 8), was, paradoxically, the cause of deterioration in other sectors, which themselves provided a guarantee for better production in sorghum. Ahmed and El-Battahani (1995:204) note that since the mid-1970s, the maldistribution of investment in economic sectors has become a characteristic feature of the Sudanese economy, particularly in relation to private investment concerned primarily with securing quick returns and large profit margins. In their

Table 5.4: Average area, production, and yield of cotton

Season	Irrigated			Flood			Rainfed			Total			Cotton seeds (000 tons)	
	Area (000 fed.)	Production (000 tons)	Yield (kantaresh/ fed.)	Area (000 fed.)	Production (000 tons)	Yield (kantaresh/ fed.)	Area (000 fed.)	Production (000 tons)	Yield (kantaresh/ fed.)	Area (000 fed.)	Production (000 tons)	Yield (kantaresh/ fed.)		
Average 10 yrs														
1974/75-83/84	856	445	3.63	23	2	0.61	143	17	0.83	1026	456	3.16	310	
84/85	854	618	5.1	10	1	0.76	129	24	1.30	993	643	4.58	429	
85/86	726	404	3.85	30	6	1.50	60	13	1.53	816	423	3.66	276	
86/87	749	528	4.92	40	8	1.40	39	10	1.79	828	546	4.7	364	
87/88	724	434	4.20	19	4	1.50	43	6	1.00	786	444	4.00	296	
88/89	699	486	5.00	25	12	3.50	67	16	1.70	791	514	4.6	343	
89/90	657	395	4.2	15	6	2.80	30	7	1.63	702	408	4.1	272	
90/91	425	236	3.88	-	-	-	13	3	1.50	438	239	3.9	153	
91/92	353	259	5.30	10	3	2.00	92	18	1.40	455	280	4.4	179	
92/93	291	158	3.80	30	8	2.00	35	4	0.81	356	170	3.4	112	
93/94	266	140	3.70	12	4	2.50	14	4	1.80	292	148	3.6	99	
Average	574	366	4.45	19	5	1.90	52	11	1.41	646	382	4.13	252	
%	-32.9	-17.8	+22.6	-17.4	+150	+211.5	-63.6	-35.3	+70.0	-37.0	-17.8	+30.7	-18.7	

Source: GAPS (2000:9, Table 4).

view, the rapid urban growth of Khartoum generally met these objectives through investments in trade, land development, and services. The consequence was that 75.5 per cent of total private investment in the period 1970-80 went to such uses as construction of new buildings, hotels, transport and travel agencies, leaving just 24 per cent to agriculture and industry (Ahmed and El-Battahani 1995:204).

This whole development, in connection with privatisation, affected significant changes in the attitude of public servants. Corruption became entrenched, with some social groups 'benefiting from the generous commissions and contracts spilling over from the high level of public sector investment' (Barnett 1988:5). In this atmosphere, allocation of agricultural projects was certainly one lucrative arena. According to Adam (1987:25) 'the allocation of government productive services following the implementation of such projects was characterized by personal and discriminatory measures favourable to the promotion of the interests of the prosperous strata and adverse to the production and living conditions of the majority of the farming population'. In this regard, it was the abuse of good agricultural lands and their allocation for other purposes that might have contributed to food insecurity. One other factor, particularly in connection with urban areas, is the sudden shift in lifestyle of a large group of population following the lucrative gains from privatisation. Here the reference is in particular to the large segment being added to the middle class – Islamist middle class with a significant fraction turning into an aggressive *nouveau riche*, largely enriched through the prevailing atmosphere of corruption and engaging in speculation and trading in hard currency. The leading party in this new economic system was the Islamic banking system, which first appeared in the Sudan with the inauguration of Faisal Islamic Bank in 1978. The Faisal Islamic banking system, with its ideological commitment of empowering and entrenching the financial elite class, primarily the NIF business class, played a significant role in helping the NIF party turn from a political minority into a party that would reshape Sudan's physical, political, and cultural landscape for more than three decades to follow.

This development option found its political expression in the fundamentalist National Islamic Front (Suliman 2000:148). With the dominance of the Islamist bourgeoisie, the food needs of the Sudanese people became seriously jeopardised. This is not only because a large number of members of the Islamic bourgeoisie were new to production and commerce, but basically because of its universal – not national – commitment to re-installing an abstract Islamic caliphate. The latter was strange to the absolute majority of the Sudanese; however, in order for the National Islamic Front (NIF) to revive it, a quarter of a million Sudanese people died in western and eastern Sudan in 1984/85 and 2 million died in southern Sudan between 1983 and 2000. This operated through the Islamist bourgeoisie's practice of hoarding money, the type of investment they choose, and their conception of rural areas. It is to that last that the shift in investment from agriculture to services is attributable. For Suliman (2000:148-9), the incredible speed of the shift from a broad framework of "Muslim brothers" to a semi-mili-

tary organisation was conceived only as a transformation of the *jellaba* segment, represented by the NIF, from liberal to violent brutal methods of wealth accumulation based on short-range quick gain. Arab capital dealt the *coup de grace* to the agrarian bourgeoisie, thus effectively replacing it with the parasitic commercial bourgeoisie. Its *ideologically* committed side (manifest in the Faisal *Islamic banking* system), however, provided ground for the most parasitic and greedy faction of this class, i.e. the Islamist bourgeoisie.

Under the Islamist bourgeoisie the looting of resources proved to be more avaricious; however, it was accompanied by effective masking of its scale and consequences through use of a dear virtue (i.e. religion). Nevertheless, the cultural violence exercised by the Islamist bourgeoisie led to the resumption of the civil war which added one more reason for food insecurity. The wars of liberation waged by different ecologically marginalised and culturally agonised groups to regain their looted lands and cultural space is in fact the cause and result of the ceasing of agricultural operations in different parts of the country (see Suliman 2000).

For the Arabs this was a hunt for “virtual water”. Saudi-Sudanese business groups established common projects in the two countries in addition to the flow of capital from the Gulf states towards some projects in the Sudan, especially related to oil and agriculture (Suliman 2000:151-2). The wealth generated by the NIF cadres generated scarcity not by decreasing the existing pie, but by creating a new demand. This demand was basically for political and economic power. This party’s success in allying with Nimeiri brought into the state apparatus a large number of “outcasts” – a new religious “elite” who by virtue of their “training” were slightly or not at all qualified for civil service or modern state functions. These either displaced modern civil servants and took over their jobs or created new jobs for themselves. Certainly, with a system increasingly leaning towards privatisation there appeared an acute scarcity of public-sector jobs. The religious cadres, being the “elect” who should rule the Sudan and “empower” themselves to guard God’s commands on Earth, had thus scrambled to accumulate wealth from every possible source, regardless of whether it was damaging for the national economy and the environment and whether it violated all soundly perceived ethics. Resource scarcity, for us, must be viewed in connection with this scramble. At the macro level, it is present in the construction of a new (religious elite) with ambitions not only to share the existing pie, but, in fact – religiously sanctioned – , to swallow it altogether alone.

As pointed out above, the modern sector was basically oriented towards producing for the market and hardly considered substitutes for what the traditional sector lost. The breadbasket strategy, adopted in the 1970s was followed by the reverse in the 1980s and 1990s, with Sudan becoming among the worst cases in the world in terms of satisfying its own food needs.

The sad thing about these developments is that Sudan neither maintained its food production policies nor attained the potential of its cotton comparative advantage, as the latter’s markets deteriorated (Suliman 2000:124). ‘Concentration

on export crops had put great pressure and practical constraints on the use of human and natural resources to produce food. In the long run, this has led to food shortages and famine and has triggered an unprecedented mass exodus from rural areas to urban centers' (Hassaballa and Eltigani 1995:28). As the exodus direction (detailed in Chapter 6) might indicate, famines and food shortages were not felt equally throughout the Sudan. The natural consequence of the state's bias was that the rural areas underwent the brunt of food shortage and famine. In the rural locales, particularly in the NRZ, the sector that faced the most detrimental effects of food shortage and famine was the pastoralist sector. The following section provides a brief discussion of causes of famines and food insecurity in the rural subsistence economies of the Sudan, particularly in eastern, western and southern Sudan – the regions that sent relatively higher numbers of internally displaced persons into the downstream RZ in the 1980s-hitherto.

#### **5.4 Collapse of subsistence economies: Food insecurity in NRZ and upstream RZ rural areas**

The causes of famine are now revealed as part of the structural relationship that governs and links the localities to a politically centralised system and the economically magnetic core of the central RZ, essentially within an authoritarian development paradigm. The impact of agricultural policies in the Sudan, as Barnett (1988:3) argues, 'was not uniform – some areas and some populations were needed to provide labour for profitable investment projects. Others, particularly, in the south and the west, experienced both exploitation and neglect, in this case overlaid by a patina of racism.' This operated through the exercise of power at the disposal of the central RZ-seated elite. 'A top-down approach encouraging cash crops and changing the land tenure systems in favour of the rich and hence leading to the total marginalization of pastoralists and small cultivators was the core of the agricultural policies adopted by the state' (Ahmed 1994:60). The state's top-down approach gradually transformed the NRZ food self-sufficient regions into food deficit ones. Expansion of traditional agriculture, associated with cash crops and "resource capture" caused by mechanised farming were at the centre of the problem (see Al-Karsani 2000:34). What was espoused as a mitigating factor in Nile hydropolitics was thus rendered a cause of water scarcity itself.

##### **5.4.1 Food insecurity in the NRZ**

This section addresses food insecurity in the NRZ in connection with two economic activities, i.e. pastoralism and traditional farming. However, this presentation strategy should be understood in relation to the purpose of our analysis, as in practical terms it is difficult to conceive of a pure pastoralist or pure farming activity. In fact, a mixed economy of both activities prevails in most of the Sudan. Here we argue that a combination of failure to sustainably develop wa-

ter resources (Chapter 3) and disturbance of the water partition in the NRZ (Chapter 4) operated as catalysts pushing rural communities in this zone to the edge of livelihood disaster. This, combined with consequent conflicts, ultimately resulted in mass displacement to the downstream RZ's rural and urban areas (Chapter 6).

*Food insecurity and abandonment of pastoralism in the NRZ (eastern Sudan)*

Malnutrition and critical food shortage in the Sudan leading to famine were the outcome of authoritarian development which, through resource capture and linking traditional economies to the market, reduced the variety of food sources, the amount and quality of food available, and its accessibility. Authoritarian development started in the NRZ, namely in the Eastern Region, before it started in the downstream RZ, where land was expropriated for large-scale cotton cultivation (Chapter 4). This region was the most troubled in terms of food insecurity of all regions in the Sudan. The Red Sea Hills witnessed, in the last hundred years, seven outbreaks of major famines, as well as localised ones caused by spatial variability of rainfall (Egeimi 1996:40). Besides the four famines that took place during the British rule, the eastern region in the post-independence era continued to experience famines. Two years after the Sudan acquired independence, in the period 1958-60, a famine locally known as *American* hit eastern Sudan, followed by the *Kiloiate* famine in the period 1970-72 and the *el-Khawaga* famine in 1984-85 (Egeimi 1996:40) (Table 5.1).

While variability of rainfall, as mentioned earlier, could be considered the immediate cause of famines, a direct link to historical causes can be established in connection with resource capture (necessary for the expansion of the external system) and the resultant ecological marginalisation. Egeimi (1996:41), along with Mahamed Salih and Paul, notes that commercialisation of the Gash and Tokar Delta, through the introduction of cotton by the British, resulted in the loss of large tracts of grazing resources as well as large areas of *dura* for cotton. For him, this represents the genesis of geographical, ecological, and economic marginalisation, as the Hadendawa started to face 'lack of access to important dry season water and grazing resources and an important source of *dura* grains and residues for fodder'. The dominance of the newly introduced system left little or no place for interactions on equal footing between the new external system and the indigenous one (see Abdel Ati 1996:55).

The link to resource capture as the cause of famines in the Eastern Region can be clearly established by looking at the frequency with which serious famines occurred before and after the initiation of the Eastern Region's irrigated schemes (Table 5.1). Thus, while it took more than three decades, after the famine of *Senet Sitta* (1888) for the next famine to occur in 1920, before the initiation of Tokar Scheme in 1926 it took only 19 years for the next famine to occur in 1940, i.e. 14 years after the scheme started. The number of years separating famines decreased

significantly thereafter. Four other famines occurred between 1941 and 1984 with the length of time separating them ranging between 6 and 12 years.

Thus, while reasonably lengthy timespans separating famines could allow pastoralists to replenish their herds, their increased frequency signalled the total collapse of pastoralism in eastern Sudan. Famines now take place not necessarily because of the direct impact of drought, but due to the impacts of the previous famine. Referring to the Red Sea Hills area, Shazali (2000:107) notes that the 1980s famine was caused by inaccessibility to food rather than a fall in its aggregate supply. In our understanding, the remaining segment of the herd that did not perish because of drought was then lost to famine-defined prices, operating through the medium of ecological and political marginalisation. The latter two forms of marginalisation, according to Egeimi (1996:42), made the Hadendawa 'increasingly vulnerable to economic marginalization through the operation of the markets and trade relations, particularly livestock-grain price relations during episodes of drought'. Empirical evidence from the Sinkat district shows that the Hadendawa, during episodes of drought, undergo severe stress of de-capitalisation caused not only by the direct effect of drought but more significantly by unequal terms of trade associated with steep rise in dura prices and depressed prices for animals (Egeimi 1996:42-3). Thus, while the prices of goats were in the range of 200 Sudanese pounds and sheep some 300 pounds the price of a sack of sorghum was in the range of 250. When drought struck the price of the former two collapsed to the range of 100 pounds and the latter leapt to some 1,300 pounds (Egeimi 1996:49, see also Mohamed Salih 1992:15).

The fate of pastoralists in the Eastern Region awaits pastoralists in other parts of the Sudan undergoing the impact of excessive resource capture. The situation in eastern Sudan in this case reflects the impact of earlier large-scale resource capture than in other regions, which witnessed "resource capture" relatively recently. A whole ecological zone, i.e. the desert, with its previous contribution to the national budget, is now being lost; in fact being abandoned (for details see Krzywinski and Pierce 2001, HCENR 2003:7).

#### *Collapse of the traditional farming sector of the NRZ and chronic food insecurity*

Regarding the NRZ of western Sudan, the impacts of famines and food shortages were rather unusual; actually, the two regions of Kordofan and Darfur, as we noted earlier until late-1970s, were maintaining competent economies. In the west, however, the most significant contribution was from the animal production sector (Chapter 3), which added "virtual water" to other regions as well as contributing to exports and government revenues (Shepherd and El Neima 1981:11). The two regions underwent the Sahelian drought of the late 1960s and early 1970s; however, before that was the impact of the "engineering" of their landscapes through territorial limitations linked to national and international markets and consequent over-grazing and over-cultivation processes (Chapter 4). Ac-

According to O'Brien (1985:23), 'Sudan's central zones – apart from the areas immediately bordering the Nile – showed mean precipitation departures of between 0.25 and 0.85 below normal for 1968, 1970, 1971, 1972 and 1973, comparable to the deficits experienced in most of the drought-stricken areas of the Sahel.' While these precipitation departures indicated droughts throughout the Sahelian zone in the Sudan and caused famine in the eastern region, their effect in western Sudan was much less marked. Yet given the general economic dynamics in the country it was only natural that Kordofan and Darfur would follow suit with the Eastern Region. The two regions, to different degrees, experienced the impact of being engaged in unequal exchange market economies which led to an increase in the areas cultivated and herds husbanded. Moreover, both regions experienced a degree of resource capture.

The practice of storing surplus food 'was abandoned when cash crops were introduced with the encouragement of the state, and people reduced their production of staple food grains in order to produce sesame, groundnuts, etc' (Markakis 1998:89-90, see Ahmed 1987:142). As a result of engagement in cash crop production, the subsistence sector witnessed an increasing decline in productivity. In a short timespan the difference in the level of productivity had become so marked that 'sesame yields in Kordofan were 14 times higher in 1961 than in 1973' and dura and millet 'yields were four and three times higher respectively in 1961' (Markakis 1998:91). Soil fertility declined to such an extent that 'in order to produce a certain quantity of a crop a decade earlier, an area of five times is required' (Umbadda 1981:110, see Shepherd and El Neima 1981:13). Diversification away from millet because of high prices for cash crops, which reached 300 per cent between 1977 and 1982, led either to new lands being brought under cultivation or old fields being cultivated more frequently (Umbadda 1981:109). In other words, over-cultivation occurred at large-scale.

Rural producers, thus, were trapped by regimes of environmental degradation and declining wages, which were used to compensate for the low yields of their farms.

As their crop yields decline and they come to buy a growing proportion of the food they eat, they lose the ability to maintain food reserves – whether in the form of grain or livestock. As they alter their crop selection to maximise cash returns rather than direct consumption requirements, they incur greater risks of crop failure in times of unfavourable rains and, in the long run, further impoverish their soil' (O'Brien 1985:30).

This process led the rate of rural population living below the food poverty line to increase to 83 per cent (CSS 1998:359). Rural producers became more vulnerable to droughts after the early 1980s, even though these droughts were milder compared to those of the 1970s (for details see O'Brien 1985:30-1). In the last decade

and a half although there has been no drought as serious as that of 1984-85, trails of internally displaced persons continue to pour into urban areas (Chapter 6).

Expanding the cultivated area had always been an option to compensate for low yields. Interestingly, this meant that the drive to expand was so vehement that even the expansive lands in Kordofan and Darfur ran short of meeting the tillers demand.

Despite the low population density in the west, land shortages have affected subsistence sector there. It is estimated that a family of six requires 15 hectares of land to raise enough grain for its own consumption, but few families have enough land to devote 15 hectares solely for raising grain. Productivity in rural sector has continued to decline (Markakis 1998:91).

Shortage of land, in this respect, should be understood as mainly caused by the expansion of the area for cash crops and by land degradation, which turned large tracts unproductive. The developments that structurally linked rural producers to modern export and administrative systems 'have not been accompanied by improvements in the techniques and instruments of production since the colonial period' (Babiker 1986:393). Land and other means of production remained the same, while regulations that govern the produce are changing dramatically. 'The size of land that a small producer can cultivate and the level of yield will depend on the amount of rainfall and labour provided by his family. Under these conditions peasants experience not only nutritional deficiencies but usually a "hungry season" as well' (Babiker 1986:393). Within a degraded system unlikely to be aided with measures to enhance its productivity or rehabilitate its degraded part, declines in productivity become a natural consequence and food shortage or even famine becomes highly predictable.

For the whole of the northern Sudan, particularly the NRZ, unlike previous famines, the 1984-85 famine brought the collapse of subsistence economies into sharp focus, both in terms of the geographical extent of the drought-hit area, the human toll, and its aftermath of displacement. The drought-affected region produced 90 per cent of the Sudan's agricultural crops, 95 per cent of its food crops and oil seeds, and 85 per cent of its firewood (Eltigani 1995: 1-2, see also Al-Mahal and Omer 1992:13-14). Moreover, this region accommodated 80 percent of the livestock in the country (Abu Sin 1995:16). The population affected by the 1984-85 drought and desertification exceeded 8 million and those who were displaced counted 1.5 million, while those in the areas that underwent the spread of famine reached about 2.4 million persons (Al-Mahal and Omer 1992:13-14). Thus, the drought affected the near total population in the three NRZ regions of Darfur, Kordofan, and the Eastern Region was affected by famine.

The effect of this drought is apparent in the further decline in the yield of the three main crops, i.e., sorghum, wheat, and millet; where the decline of the first

two was shared by both the traditional and modern sectors and the last was predominantly cultivated in the traditional sector.

The differential impact of drought on the modern sector and traditional one is clearer in the regime of sorghum production. Overall, yield per acre of sorghum decreased by 32.9 per cent, while the total area cultivated to this crop decreased by 10.6 per cent (Mahran 1995:67). The drought impact, however, was more pronounced on millet, where despite a 3.3 per cent increase in the area under cultivation, output fell by 49.7 per cent, resulting in a 51.3 per cent decline in yield per acre compared with the 1983/84 season (Mahran 1995:67). Rainfed production of grains fell to just 30 per cent from previous years (Suliman 2000:428). Even the RZ underwent similar impact. Area cultivated under wheat in the northern and central regions, as Table 5.5 suggests, dropped from the 486,000 *feddans* average for the previous 10 years to only 115,000 *feddans* in 1984/85. According to Mahran (1995:67), the area under wheat, during 1984-85, decreased by 67 per cent compared with the previous year, probably because of the poor rainfall in Ethiopia that season, which affected the level of the Nile and, therefore, the amount of water available for irrigation.

Subsequently, the traditional sector was caught in increasing decline. From the 1984/85 season the size of areas cultivated showed significant fluctuation with a general trend of decline, averaging 14 per cent less than the average of the previous 10 years. With a dramatic decrease in yield per *feddans*, production of sorghum in the traditional sector slid by 44.9 per cent. Though the positive performance of the other three sorghum sectors did compensate for the fall in the traditional sector, yield for the overall sorghum sector nonetheless declined by 14 per cent (Table 5.2). Millet production on the other hand was even worse. Though the area cultivated under millet increased by an average of 3.7 per cent, its production declined by 45.7 per cent and yield per *feddans* slid by 47.3 per cent (Table 5.3). As the area under millet was dominated by the traditional rain-fed sector (accounting for 96 per cent of land under millet), the output of the mechanised millet sector (3.5 per cent of total area) did not compensate for the declines. Thus, the overall average millet production declined by 41.2 per cent and its average productivity decreased by 45 per cent (Table 5.3). Unlike sorghum and millet, the areas under wheat picked up after the 1984/85 drought with dramatic increases noticed in the northern region. The overall area under wheat in the northern and central regions increased by 18.1 per cent by the 1993/94 season, production had risen by 67.6 per cent, and yield by 41.6 per cent. (For further details regarding deterioration in grains productions see Suliman 2000:126.)

Similarly, the 1984-85 droughts had an enormous effect on livestock. In the country at large an estimated 3 million head of cattle, more than 4 million of sheep and goats and about 800,000 camels were lost (Al-Mahal and Omer 1992:13-14). The severity of the drought in the two NRZ regions of Kordofan and Darfur was significant, with their northern provinces, according to 1986 estimates of the Regional Departments of Animal Resources, losing two-thirds to

Table 5.5: Average area, production, and yield of wheat

Season	Northern region			Central region			Total		
	Area (000 fed.)	Production (000 tons)	Yield (kg/fed.)	Area (000 fed.)	Production (000 tons)	Yield (kg/fed.)	Area (000 fed.)	Production (000 tons)	Yield (kg/fed.)
Average 10 yrs									
1974/75-83/84	27	18	678	459	204	444	486	222	457
84/85	50	34	680	65	45	600	115	79	687
85/86	60	46	767	300	153	510	360	199	553
86/87	48	37	771	234	120	53	282	157	557
87/88	45	34	756	298	147	493	343	181	528
88/89	35	34	971	358	213	595	393	247	628
89/90	74	85	1148	540	324	600	614	409	666
90/91	152	164	1082	950	522	549	1102	686	623
91/92	115	138	1200	788	700	888	903	838	928
92/93	85	68	800	692	377	545	777	445	573
93/94	130	110	850	721	465	507	851	475	358
Average	79	75	945	495	297	560	574	372	647
%	+129.7	+316.7	+39.4	+7.8	+45.6	+26.1	+18.1	+67.7	+41.6

Source: GAPS (2000:9).

three-quarters of their livestock (Visser 1989:323, see also El Tom 1987:151, Ibrahim 1996:260). In combination with crop failure, this resulted in the famine of 1984-85, which took the lives of 250,000 people (Haug 2000:12, see also Gore 1991:70-3, Al-Mahal and Omer 1992:14).

Drought had severe repercussions for the farmers and nomads who made up to 70 per cent of the country's population. Indeed, their traditional economy was subject to greater environmental hazards and they faced greater risks from population concentration and displacement than those engaged in the modern sector (Abu Sin 1995:15).

The issue of food insecurity in the west, since then, seems not to be bound by the incidence of drought *per se*. 'Famine conditions were reported in the west during late 1980s and again in the early 1990s' (Markakis 1998:91). In fact, food insecurity has become the norm, where in 1991 it took the form of what is officially labelled as a "food gap", to avoid the embarrassing declaration of famine for the then new regime. Towards mid-1990s, the situation was not better. By that time, Ahmed (1993:119) notes, an estimated 1.3 million people in northern Sudan were expected to require relief assistance of 157,000 metric tons. These included 730,000 persons in Darfur, 420,000 persons in Kordofan, and 150,000 persons in the Red Sea Hills. He notes that another 2.9 million people were displaced and expected to require ongoing food and non-food assistance. The erratic pattern of precipitation induced wide fluctuations in production particularly in the subsistence sector. In the 1993/94 season, estimated production was 48 per cent lower than the previous season because of low rainfall, late planting, and pests (Markakis 1998:91).

Traditional agriculture, which was in harmony with pastoralism, started to collapse in the clay plains of central and northern Sudan, increasing the number of the poor and spurring the migration of many to urban areas. The post-independence policies of establishment of large-scale irrigated agriculture and expansion of rainfed mechanised agriculture, thus, brought disastrous consequences, particularly in the NRZ. 'The eastern and western regions of Northern Sudan remain areas of *chronic food insecurity, and famine is a constant threat* there. Drought has visited Northern Sudan intermittently, and the conditions that turn drought into famine have not improved; indeed they have worsened' (Markakis 1998:91, italics added).

Tribal conflicts, armed banditry, and civil war which have their roots in the processes of "resource capture" and "ecological marginalisation", played a significant role in generating food insecurity for almost all people who lived in affected areas. In Darfur, Arab pastoralist tribes in confrontation with the Fur farmers uprooted and burned stands, destroyed farm machinery, caused huge losses of livestock, and disabled hundreds of people (Harir 1993:24, also see Ahmed 1993:118-9). They certainly made it dangerous for farmers to till the land or gather the ripening harvest.

#### 5.4.2 Food insecurity in the upstream RZ

Malnutrition and critical food shortage, leading ultimately to famine, seem only natural in the troubled region of southern Sudan (upstream RZ). The insecurity caused by civil war and its effect in generating food insecurity in the upstream RZ is, by all measures, much larger than any of the above forms of insecurity. Markakis (1998:92) notes, 'With land, water, livestock and fish in abundance, and its traditional food production systems undisturbed by commercialization, this region is self-sufficient in food.' Yet according to Abdel Gaffar M. Ahmed (1993:116), because of war, the southern groups could no longer cultivate small plots to supplement their diet, fishing and hunting became hazardous, and herds were either looted or perished. Similarly, Prendergast (2000:57) notes that in many parts of southern Sudan 'violent conflict has caused a total disruption of the existing subsistence economy'. Aggravating the food insecurity problems was the incredible number of actors engaged in the war in southern Sudan and the systematic expropriation of the produce and property of the farmers by the parties in conflict. Markakis (1998:92), referring to the war condition, states,

[T]he result was a proliferation of armed groups which to varying degrees, depended for their food upon the local population. This they got mostly by looting, or, as in the case of the Sudan Peoples Liberation Army (SPLA), by imposing arbitrary taxation. Since the production system in the South was designed for subsistence and not for surplus, the expropriated food represented a net reduction from local consumption (See Al Bander 2000).

Disturbance of the food production process stemmed not only from the condition of insecurity to farm, but significantly from the dislocation of people from land and the destruction of their means of production, as Prendergast (2000) and Markakis (1998) argue. Conflict in the south included 'tactics aimed at civilians and the deliberate creation of huge population movements and pressures, which caused the disruption of normal coping mechanisms and the onset of crisis above and beyond the normal pattern of poverty produced by maldevelopment and inequitable control over power and resources' (Prendergast 2000:57 see also Markakis 1998:92). Thus, subsistence producers were used in the battle due to the very fact that they were food producers. Dislocation of people is determined by military strategic necessities, not soil fertility. And it was for these strategic necessities that famine was reproduced. 'People were removed from their villages and herded into "strategic hamlets" where congestion soon decimated the herds. Their homes and crops in the field were burnt, their water sources poisoned, their animals killed' (Markakis 1998:92).

In late 1980s famine began to take an increasing toll, reaching its peak in 1991. Compounding the situation, the isolation of the region, the chaotic conditions caused by the manifold conflict and the attitude of the Sudanese regime and the SPLA obstructing efforts to bring food aid, hampered international organisa-

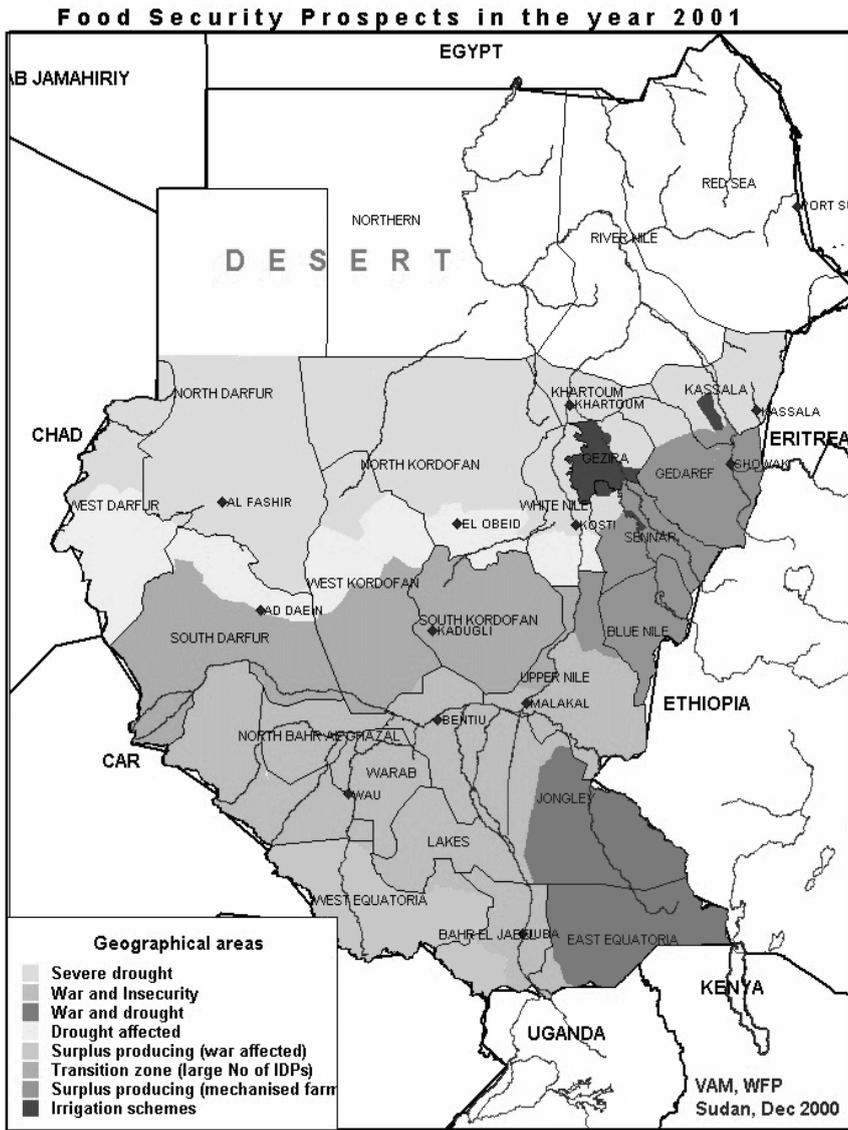
tions' efforts to reach the victims (Markakis 1998:92, see also Mohamed Salih 1999:153). In 1995, drought struck again, compounded by factional hostilities and diversion of famine relief, resulting in the death of an estimated 250,000 people in southern Sudan (Goldsmith *et al.* 2002:217). The toll of the war is incomparable to that of famine and armed banditry. According to Mohamed Salih (1999:152) since its inception, the civil war cost the lives of 1.5 million southern Sudanese, where the death of civilians was largely caused by famine, floods, and epidemics (see Majak 2000:51).

Thus, what drought failed to inflict on southern Sudan the war achieved more damagingly. The implication of the situation is that the production process has been disrupted in several respects, chief among them breaking up the economic integrity of the family as the productive unit and the loss of able-bodied workers to famine or the battlefield. In short, this means a reproduction of famine, leading to chronic food insecurity. According to Markakis (1998:92), 'the civil war is directly responsible for turning *Southern Sudan* into a *chronically food-insecure area*, where famine has taken a steady toll of human lives for more than a decade' (see also Kevane and Stiansen 1998:2, Waterbury 2002:130, 141, italics added). A study conducted this year by the New Sudan Centre for Statistics and Evaluation (NSCSE) in association with UNICEF (2004:5) shows the prevalence of malnutrition to be 48 per cent and severe malnutrition at 21 per cent among children under five in southern Sudan SPLM areas (SOSUS). This is almost three times higher than in the rest of Sudan. Southern Sudan ranks worst in the world in malnutrition, among other indicators. Referring to southern Sudan, Waterbury (2002:141) notes, 'It would be hard to find any spot on earth where life has been so miserable for so long.' Even the surplus-producing zone in the southwest protected by the swamps is affected by the war.

Complicating food insecurity in southern Sudan as well as in other war zones in the country are the widely spread landmines that occupy large tracts of farmlands, making them inaccessible. Landmines cover one-third of the nation's territory (in 16 of Sudan's 26 states) with 70,000 people having lost their lives or been handicapped or wounded by landmines (*Al-Sahafa* 16 July 2004). Estimated at 1 million devices, landmines are expected to be a major hindrance to relief transportation for 600,000 southern Sudanese returnees (*Sudan Tribune* 27 August 2004).

Figure 5.1 shows the stark food insecurity situation in the Sudan. With the exception of areas under mechanised farming in eastern and central Sudan and the irrigated schemes in the central RZ, all remaining regions are trapped in a cycle of food insecurity. They are either undergoing the impact of drought or war or a combination of the two. Causes of food insecurity in both northern Sudan and southern Sudan reinforce each other, with conflict representing a major cause in both parts of the country.

Figure 5.1: Food security prospects in the year 2001



Source: ReliefWeb (2006)

Indirectly related to the civil war in the South, but with a similar impact, is the growing rural insecurity in parts of Western Sudan (Kordofan and Dar Fur), where rural life has been undermined by banditry and inter-ethnic conflicts. In certain parts of this area, for example, cattle rustling has reached such an extent that rural people are selling animals and moving out of the livestock economy (Ahmed 1993:119).

However, displacement, causing the disruption of productive activities (Ahmed 1993:118), remains the most important cause of famines. It renders people who had been sustainable food producers dependent on relief food (see Mohamed Salih 1999:86). 'The displaced people were already poor, but war and displacement have impoverished them further by denying them access to traditional productive resources, mainly cultivable land and livestock' (Mohamed Salih 1999:152). As Figure 5.1 suggests, the whole savannah zone of southern Kordofan and southern Darfur, which in the past produced surplus, has now become a transition zone for large numbers of internally displaced persons.

Displacement contributes to food insecurity, not only by decreasing the numbers of producers in production areas and increasing the claimants of food in urban areas, but also by affecting the production network in the localities as well as the consequent social disintegration. Such negative developments have struck at the social cultural foundation and led to a shift in its dynamics (Abdel Ati 1996). Closely connected with economic marginalisation, according to Egeimi (1996:43), 'is the erosion of the Hadendawa's "moral economy" that historically acted as an informal social welfare mechanism and an important source of social resilience'. Field investigations, according to Egeimi (1996:35), suggest that the social mechanisms of sharing animals in the form of a loan or a gift have been extremely weakened during the last decade by the sharp decline in animal wealth and rise of food prices (see also Ahmed and Abdel Ati 1996, Ahmed 1994:58).

## 5.5 Concluding remarks

This chapter provided an overview of food insecurity in the history of the Sudan and detailed the processes which generated abundance in food cereals in the 1960s and 1970s and how they turned to generating food crisis. While famines of the nineteenth century and early twentieth century could be attributed mainly to radical political upheavals, those of the 1980s-hitherto are primarily the outcome of unsustainable development. They are outcomes of processes of "resource capture" and "ecological marginalisation" driven by the expansion of the modern agricultural sector in its two sub-sectors of irrigated and rainfed mechanised farming, which contributed to recurrent droughts and tribal and civil wars. We derived from the discussion that the rainfed sub-sector, in particular, which should have relieved the Nile water from pressure, has actually sunk into crisis, depleting the meagre capital necessary for developing the irrigated sub-sector, depleting large tracts of land captured from the traditional sector, and squeezing traditional farmers and pastoralists onto marginal, less productive lands.

Thus, food production in this sub-sector not only jeopardised the sustainable traditional food production but also failed to produce an alternative for overcoming famines at the national level. For the first time in known history, the NRZ food surplus-producing regions of Kordofan and Darfur started to live with chronic food insecurity. The depressing picture is that, at one point, almost the

entire population of Kordofan and Darfur – previously surplus producers – became dependent on food relief. Similarly, for the first time in known history, the food self-sufficient upstream RZ (southern Sudan) started to witness lengthy and chronic food insecurity. The picture of food insecurity painted here is made even grimmer by the expansive spread of landmines. The NRZ of eastern Sudan, particularly its Red Sea Hills area, which suffered the earlier impact of expansion of modern sector, has therefore long failed to produce surplus and suffered the worst impact in the almost total collapse of its traditional production systems.

Expanding at the expense of local producers, the modern sector, particularly that of mechanised food production, provoked relentless resistance by communities whose lands had been captured. Resistance took the form of regional armed rebellions (Chapter 4). Moreover, the modern sector's large-scale degradation of the environment caused manifold conflicts among communities who faced shrinking farming and herding resources. It therefore contributed to widespread insecurity, which not only halted its operations in some areas, but also negatively affected production in the traditional sector. Thus, save very few pockets where farmers still felt safe to till the land, for the most part the food producing landscape of the NRZ and upstream RZ became a zone of hunger. The NRZ and upstream RZ were no longer accommodative to their historic inhabitants. The destination of these former inhabitants, now internally displaced persons, was the secure downstream RZ. There, in this arid and semi-arid zone, production is not dependent on erratic rainfall; rather, on irrigation, and there the elite cares about their own security and, therefore, seeks to "guarantee" the security of most of those who cohabit this limited area. The rainfed sector adventure, which involved the hope of relieving the Nile, thus, brought unprecedented pressures to the banks of the river, in the form of increasing population concentration. These are the subjects of the next two chapters – population concentration in the rural areas of the downstream RZ in Chapter 6 and concentration in urban areas in Chapter 7.



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## 6 Population Redistribution Trends: From Relieving to Squeezing the Nile

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### 6.1 Introduction

Two forces effectively protected the downstream RZ from encountering water scarcity. The first was the political/administrative and military regulations that centralised regimes, both historical and contemporaneous, and invading powers exercised over the Nile Valley which repelled large groups of population from its environs. The second, especially in the post-independence period, was the powerful ruling alliance, which successfully manipulated existing land ownership regulations, and unleashed an incredible resource capture in the rainfed NRZ for large-scale agricultural expansion, without which agricultural expansion would have occurred in the downstream RZ. These two forces for quite some time relieved the Nile from pressure of increasing population concentration. However, ultimately they generated counter-forces (environmental degradation and ethnic conflicts that seem to have effectively blocked the previously perceived “open frontier”) with their obvious consequences of food insecurity, mass population displacement, and population settlement/concentration in the downstream RZ. Population redistribution trends help to explain the coming age of irrigation water scarcity – a situation felt for the first time in the known history of Sudan. This development, together with population concentration in riverain urban areas (Chapter 7), had clear impact on relations between the downstream RZ and the NRZ/upstream RZ (Chapter 8) as well as on the inter-state relations in the Nile Basin at large (Chapters 9, and 10). This population concentration itself is what makes the Sudan’s contest for more water legitimate.

This chapter addresses the third effect of environmental scarcity, i.e. population displacement; however, by viewing it in a historical context in which its impact fluctuated from relieving the river of possible stress at one time to overwhelming it at another. The chapter details and uses the incidences of population concentration to verify the impact of resource capture and “ecological marginalisation”. It examines population movements with the aim of painting a general picture of resources and the patterns these movements followed in relation to the downstream RZ – out-migration from the downstream RZ to the NRZ/upstream RZ and the reverse. In this respect, the chapter aims to figure out the population distribution and redistribution trends, the magnitude of movements in different historical epochs, and

necessarily, the consequent population concentration at the regional level. This chapter, therefore, argues that for more than a century between 1820 and the early 1920s, the downstream RZ was largely a population-sending area, whose out-migrants were largely received in the resource-rich plains to the west and east of the Nile – areas largely in the NRZ and the upstream RZ.

This characterisation of the downstream RZ in relation to the NRZ/upstream RZ – the former sending and the latter receiving groups of population during the mentioned period – in fact, reinforced a pattern that prevailed since the seventh century. The nature of political regimes in control of the Nile Valley in the Sudan were the main reason for this out-migration, while the easy accessibility of the NRZ plains worked as an incentive for immigrants. In this respect, the chapter argues that for more than a millennium, measures taken by politically centralised regimes and the cruelty of invading armies since 1820 contributed to stagnating or even decreasing the demand for Nile water. These regimes had expelled groups of population and made it difficult for them to return to the river banks. They delayed the use of large amounts of water and between 1820 and 1885 actually reversed the agricultural regime, which should have led to more sophisticated irrigation systems. The expansive western NRZ plains, and partly the eastern NRZ plains, have thus always relieved the narrow Nile Valley, i.e. the downstream RZ, from pressures caused by population concentration.

The chapter argues that from the 1910s this millennial pattern was reversed, with the downstream RZ becoming the target for labour migrants and returnees who eventually became settlers in its domain. Recently, the downstream RZ became the refuge for the drought-, war- and famine-hit displaced groups. The process of degrading the resources (human and natural) of the NRZ has been largely responsible for the movements of population towards the now resource-promoted downstream RZ. Thus, the consciously effected land regulations, which left community lands an “open frontier” for expansion by the state and speculators, disrupted the partitioning of water flows, as they paved the ground for land-use conversion through large-scale resource capture, intensification of crop production, and consequent local and regional conflicts. The unintended side effects of these regulations and their impact on the localities in the NRZ/upstream RZ occurred farther downstream in the downstream RZ, primarily manifest in the impact of population concentration.

This chapter is divided into two main sections. Section 6.2 investigates the patterns of politically and economically-induced population movements in general terms from the seventh century, with more detail from the 1820s until the early twentieth century. The main concern in this section is to portray and examine whether the patterns of population movements during this era were characterised largely by movement from the downstream RZ into the NRZ. Section 6.3 covers the period from the early twentieth century up to 2004 and examines the population distribution trends to discover whether the millennial pattern is being reversed. The chapter, besides comparing and contrasting popu-

lation movements between the RZ and NRZ, also compares and contrasts downstream RZ and upstream RZ population distribution trends.

## **6.2 Pre-twentieth century population movements**

This section addresses issues of resources and movements of the actors involved during two periods, namely the “millennial regime” and the longest part of the “regime without hegemon”, i.e. Turkish rule.

### **6.2.1 A millennial population movement pattern of distancing from the River Nile**

Since ancient times, the current territory of the Sudan has been a domain for interactions between different groups of population. But the clear fact is that the Sudan in general has remained the recipient of waves of immigrants from different neighbouring regions and continents. According to Mohammed (2001b:1) today’s Sudan was formed by waves of immigrants and is still the destination of Arabs coming from Arabia and Nubians and Negroid tribes attracted to this country by the availability of pasture and water as well as its being on the pilgrimage route to Mecca. However, the magnitude of migration and its density differed through time and from area to area, depending on availability of and access to resources.

Thus, the relationship between the Nile Valley, or, more strictly, the arid RZ, and its surroundings, namely the western and eastern plains (i.e. the NRZ), was one of influencing these surroundings and being influenced by groups in these surroundings. The camel, introduced in the third century and whose numbers had immensely increased by the second half of the seventh century (Chapter 3), probably played the most decisive role in reshaping the relationship between the plains to the east and west with the River Nile during the “millennial era”. In our understanding, the introduction of the camel signalled the first most dramatic transition in the Nile Basin in modern times. It linked the Nile Valley and its environs to the Mediterranean, allowed the Beja from the eastern plains and the Nubian speakers from the western plains to conquer and rule over the Nile Valley (Chapter 3), and some centuries later linked the Nile Valley westward to the southern fringes of the Sahara, Lake Chad, and beyond. The “cameleers” became the geographers of the time. The camel – “the ship of the desert” – navigated the wilderness of the Sahara ocean, brought exotic goods to the Roman Empire, and with the passage of time, unveiled the Sahara’s mysteries and even made it attractive for herders of the “ship of the desert” to come in large numbers. On the track of long distance trade caravans, thus, the herders came with large numbers of camels, initiating the notion of an “open frontier” in the expansive plains to the west.

Assuming that the conquest of the Nile Valley by the inhabitants of the eastern and western plains (NRZ) would necessitate the settlement of supporters, the above incidents probably led to relatively large movements of population into the

downstream RZ. To our knowledge, from around 300 AD (see Spaulding 1998:47-8) until 1910, with the exception of the brief conquest by Darfur under Sultan Ahmed Bakr of some riverain parts of the Funj kingdom and the swift invasion by Darfur, under Sultan Teirab in 1785, towards the end of the eighteenth century (Wikipedia 2006) and the wave of Mahdist supporters in late 1880s (detailed later), no other momentous population movements took place from the western and eastern plains (i.e. NRZ) into the downstream RZ. During this period, the downstream RZ was characterised by permanent out-migration of groups of population to the NRZ, especially after it received large waves of Arab nomadic tribes from the north, namely from Egypt. The Nile Valley of Nubia remained the ownership of its own Nubian communities, or, more precisely, of the Nubian kings (see Awad 1987).

In modern times, the downstream RZ (Central, Khartoum, and Northern regions) witnessed three major waves of population immigration: the first from the north (the Arab tribes), the second from the south-east (the Nilotic tribes<sup>1</sup>), and the third “wave”, though slow and gradual since early times, took momentum in the early years of the twentieth century and largely involved groups from West Africa (see Abdelkarim 1992:108).

Around the time of the unsuccessful invasion of Nubia by Muslim Egypt (Holt and Daly 1979:15), the Arab tribes of Rabi’ah and Juhaynah made the earlier forms of migration into the Sudan between the second half of the seventh and the first half of the eighth century (Awad 1987:35). Where Christian Nubia succumbed to the gradual erosion and infiltration they induced, these tribes achieved what the Muslim failed to do through military invasion (Holt and Daly 1979:15).

[The infiltration of Arab tribes] assumed the form of a two-pronged thrust which progressed along two different routes. On one front, sections of Rabi’ah and Juhaynah tribes pushed their way along the Nile banks and mixed with riverain Nubians. On the other, different sections of the same tribes and other ones swarmed into northeastern plains inhabited by the Beja tribes (Awad 1987:34).

Those who pushed along the banks of the Nile settled thereabouts and introduced changes in the new environment, as manifest in their engagement in land-buying, the outcome of which significantly transformed the tenure system in the whole of Nubia (Awad 1987: 35).

Waves of Arab tribal immigration continued in different intervals. According to Bannaga (2001:34) conflicts in Egypt of the fourteenth century left the Arabs no other option than to escape to Nubia. In addition, recurrent famines and outbreaks of plague which prevailed during the Memlukes era, pushed large numbers of Arabs into Nubia. Furthermore, the collapse of the Christian kingdoms and the rise

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1. Nilotes, according to Waterbury (2002:139) are ‘negroid Africans who have populated parts of the Rift Valley and spread into east and central Africa.’ A faction from this stock presided over the political alliance which ruled central Sudan for over three centuries between 1504 and 1820 (Chapter 3).

of the Funj Kingdom in central Sudan encouraged more Arab immigration into the Sudan. During the fifteenth and sixteenth centuries, the infiltration of Arab nomads continued, mainly from Egypt and to a lesser extent from Tunisia (Hassan 1977:202).

We argue, in connection with the above, that the movement of traversing immigrant tribes initiated a pattern such that they first encroached onto the Nile banks and then drifted away from these banks to the plains to the west and east. Since the seventh century and up until the early decades of the twentieth century, save the short-lived waves of nomads from western Sudan around the end of the nineteenth century, noted above, nomadic tribes showed a distant relation to the river. Scarcity of land in the lower reaches of the river in northern Sudan (all owned by Nubians) and the unsuitability of the marshy upper reaches for their herds were perhaps the practical reasons for their preference for the plains to the west and the east. Important in this context is that the Baqt Treaty in the year 652 between the Nubian kings and the Muslims in Egypt prohibited the settlement of the latter in the Nubian dominion,<sup>2</sup> besides emphasising maintenance of trade relations. With regard to the latter, the Nubian kingdom of Makuria supplied, according to the Baqt Treaty, 360 sound-bodied slaves for which Egypt paid in wheat, barley, lentil, cloth, and other products (Nasr 1979:15). Respected by the two parties, this political and economic treaty stabilised the peaceful relations of Makuria with the Islamic caliphate for the next 520 years (Godlewski 2004).

Nonetheless, the key reason for the nomadic tribes to distance themselves from the river was to escape taxes imposed by centralised riverain governments. Another cause, applying to the last two centuries, is that tribes were driven away from their territories by punitive campaigns launched by regimes in control of the riverbanks and their environs. Awad (1987:37) described these immigrant nomadic tribes:

The topography and the climate of the eastern and western plains of the Sudan suited their nomadic mode of living, and rains grew enough crops and grass to support them and their livestock. A special attraction of the plains of the Sudan from the immigrants' point of view was their remoteness from the riverain towns from which the Nubian kings traditionally administered their kingdoms. They allowed them a great deal of the independence they cherished so much.

Immigrant tribes introduced significant changes in the downstream RZ. Mohammed (2001b:1) refers to Arab infiltration as the "first wave" of immigration, which he considers to have stamped the Sudan with its Arab-Islamic character (see also Seri Eddin 1998:292-4, see also Bannaga 2001:24). For Mohammed (2001b:1), the accumulation resulting from persistent immigration led to a political

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2. The Baqt Treaty was mainly signed for maintaining good neighbourliness, especially after the invading Muslims were defeated. According to Nasr (1979:15) the two parties agreed that neither party should go into the others dominion with the aim of settling therein; that protection for those who go for other purposes such as trade should be observed; and that neither party should penetrate the border of the other.

revolution which brought to the fore the embryo of the Sennar (Funj) Islamic state, described in Chapter 3. It also, as noted in the same chapter, influenced the establishment of the Fur Sultanate.

Immigrant groups from the north who managed to settle in Nubia contributed to “displace” downstream RZ indigenous groups, causing their southwards spread. Bannaga (2001:34) noted that the Mahas tribes moved from the furthest north to Tuti Island and other areas in Khartoum Province since before the era of the Funj Kingdom. Referring to the same period, Bannaga (2001:34) also notes that the Mahas and Danagla “tribes” migrated from the north to the Gezira area in the surroundings of the current town of Kamleen .

While they traversed towards the NRZ, immigrant tribes from the north replicated the same impact on the indigenous groups therein, though in larger magnitude. The clearest examples of people who were drifted out of their previous habitats were the Nuba Mountain people,<sup>3</sup> the Shilluk,<sup>4</sup> and the Dinka.<sup>5</sup> Thus, some of the marshy parts of the upstream RZ were slowly penetrated by Shilluk and Dinka who were under pressure from the advancing tribes in the north. This also shows that the largest movement was into the western plains where numbers of immigrants contributed to the cultural change of groups therein, while in the eastern plains the Beja groups largely remained culturally intact, with their language surviving up to today (see Mohamed Salih 1990:112).

The climatic conditions suiting each form of nomadism resulted in the spread of the immigrants on a wider scale covering most of the current map of the Sudan. For camel herders, the desert and semi-desert in the north were the ultimate suitable habitat with oases and *wadis* (seasonal streams) at which to replenish in large tracts of this harsh environment. Driven by the notion of an “open frontier”, the nomadic Arab tribes, thus, spread along the northern parts of the Sudanic belt between the Nile Valley and westward beyond Lake Chad (Chapter 4). A whole new activity emerged on the largely uninhabited fringes of the desert. It is clear to us today that immigrants from the north who were originally camel herders inhabited this area for a longer period and only later started to penetrate into climatic zones farther south as their environment in the north changed. It was the symbiotic relationships that they established under the reign of African kingdoms that later allowed them to

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3. The homeland of the Nuba was said to extend from north Darfur across north Kordofan eastward to the Nile Valley. From this vast territory, the Nuba now inhabit a relatively limited territory further to the south of their northern frontiers.
  4. The Shilluk’s homeland until the mid-19<sup>th</sup> century extended further to the north than its current borders. It extended up until Aba Island (see Ibrahim and Ogot 1990:367-8) north of the current town of Kosti in the Central Region.
  5. The Shilluk’s kin, the Dinka of northern Upper Nile Region, had their northern border further to the north. ‘Travellers during the early part of the 19<sup>th</sup> century’, as according to Paul Wani Gore (1987b:96), ‘have reported that the Dinka inhabited the land as far as Gebelein.’ Gore continued to say that ‘During the slave trade and as the Arab tribes expanded southwards, the Dinka were reduced in numbers and were pushed southwards to be concentrated largely in the areas presently occupied by them.’

advance south. Pointing to Arab nomads migrating from Egypt, Nilotic Sudan, and Tunisia who in the fifteenth and sixteenth centuries infiltrated into Darfur, Yusuf F. Hassan (1977:202) states, ‘Those who settled in the southern plains of Dar Fur intermarried with the local population, and came to be known as the *Baggara Arabs*’ (italics original). As the southern zones were not habitable for their camels, these immigrants, presumably, adopted cattle herding – insisting on maintaining nomadism even though farming would have proved a better alternative.

Migration from Nilotic Sudan continued throughout the seventeenth and the eighteenth centuries. It gained momentum by the time the Funj Kingdom started to disintegrate in early nineteenth century, due to both political unrest in the Funj domain and the aspirations to expand eastwards by the rival Keira Kingdom of Darfur. While referring to Kordofan under the Keira dynasty, Spaulding (1998:56) states,

As Sinnār [the Funj kingdom] disintegrated into civil war the threat of any military riposte to the Darfur conquest faded, while the reorganisation of northern rural society in the Nile valley at the hands of a rising middle class produced an unprecedented emigration of landless peasants and would-be private merchants; for these men, often termed the *jallāba*, central and southern Kordofan constituted one of several preferred destinations.

Spaulding (1998:56) continues, ‘Some newcomers sought farmland in central Kordofan, notably in the ecologically unusual oasis environment of *khayrān*. Others founded towns, of which al-Ubayyid<sup>6</sup> would prove to be the most important.’ The stability established by the Keira rule in Kordofan probably added more of a pull factor to the *jellaba*, but most importantly it was the networks already established through Arab tribes which paved the road to the western “open frontier” in general and to Kordofan in particular.

Although the expansive western and eastern plains all witnessed waves of migrants, Kordofan seems to have been the destination of larger numbers in the period earlier than movements into other regions (Chapter 4). The movement into Kordofan was facilitated by the new unifying ideology of *sufism* which was vibrant at the time (Chapter 3). With the evolution of *sufism*, transcending the tribal geographical and cognitive boundaries (presumably rather closed<sup>7</sup>) we can speak of a political entity that started to achieve unity at the ideological level and open up to its different entities. According to Kevane and Stiansen (1998:22-3), ‘the *tariqa* had quite a different effect on the local population, since it drew them out of their local

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6. This is an alternative way of writing, more accurately spelled name of the same town formally written as El Obeid, the capital city of Kordofan region.

7. The geographical expanses of the Sudan, probably, contributed to constructing strong cognitive boundaries. According to Mohamed Suliman (2000:147) the Sudan is a large country to the extent that the majority of its tribes continued to live for long time isolated from each other. This isolation, according to him, has encouraged the evolution of strong identities which are cautious towards any stranger or intruder.

frame of reference. Pilgrimages to the holy cities or a *shaykh's qubba* in a distant village were encouraged, which facilitated the breakdown of localities by *tariqas*.<sup>7</sup> It is, therefore, possible to argue that where different tribal leaders were becoming the followers of certain sufi *sheikhs* and where intermarriages gained momentum, tribal movements became more flexible. Different sultanates in northern Sudan encouraged religious men to come and settle in their domains regardless of their tribal affiliations (Chapter 3). The population distribution at the time probably changed gradually responding to this political atmosphere, which resulted in the current religious and cultural hybrid in the larger part of northern Sudan.

Yet after a rather long stabilised population distribution, some dramatic upheavals started to take effect by the early 1820s when the Turks invaded the Sudan, causing the second most dramatic change in the history of the Nile Valley in the Sudan. Communities which owned the banks of the Nile were now stripped of their possessions and evicted for decades as part of aggressive military campaigns.

### 6.2.2 Turkish rule: Footprints of a regime of terror on resources and population contours

This section provides some details on what we view as the depopulation of the irrigable areas in the downstream RZ, which was the reason for delaying expansion in irrigated agriculture in this region for more than a century and, therefore, the reason for delaying the currently-felt water scarcity.

The population of Sudan during the Turkish rule probably either stagnated or decreased in numbers; its distribution was definitely dramatically disturbed, where large regions from the further north to the southern central parts were depopulated or their population was significantly decimated. 'It was estimated that nine million people lived in this enormous space, but it may have been a million more or less, since it was impossible to count them, and no one as yet had defined the borders of the country' (Moorhead 1960:180, see Galatoli 1950:138). Worth noting is that the Sudan's population during the 1880s, was larger than that of Egypt. The latter, according to Galatoli (1950:66) had, in 1882, a population of 6.8 million. Several factors contributed to depopulate the regions of the Sudan, including large-scale slavery, famines, epidemics, forced labour, and massacres all either caused directly by the Turkish invasion or by the punitive expeditions following it.

Famines (Chapter 5) in association with forced-labour and epidemics must have decimated Sudan's population as well as triggered large population movements. However, it is the direct involvement of the Turks in manhunt and massacres, which caused the greatest human losses.

Needless to say that slavery significantly reduced the population numbers in certain regions in the Sudan. The whole regions of the Nuba Mountains, Ingessena Hills (southern Blue Nile), and southern Sudan were targets of continuous raids (see Suliman 2000:147) and hundreds of thousands, even millions were taken captive. From the Nuba Mountains alone the number of captives during the

first years of the Turkish rule reached 20,000 and climbed to about 40,000 in 1827 and reaching 200,000 in 1839 (Suliman 2000:212). Starting in the 1840s, southern Sudanese communities were to follow suit. Even after the abolition of slave trade in the Turkish-controlled Sudan in 1854, on average 2,000 slaves were being sold annually in Kaka in northern Shillukland (Ibrahim and Ogot 1990:364) alone, indicating that the plunder of human beings was enormous. Samuel Baker, the governor-general who declared the abolishment of slavery from the Nile, according to Moorhead (1960:180-81), was too optimistic since his efforts succeeded in driving the traffic off the river while leaving it flourishing in the open desert. Moorhead (1960:181) continues,

The traders found little difficulty in developing over-land routes to Egypt and the Red Sea, and in the provinces of Bahr-El-Ghazal, Darfur and Kordofan a vast manhunt was going on. At least 5,000 traders were operating there. Gessi estimated that since 1860, when the traffic began, more than 400,000 women and children had been taken from the area to be sold in Egypt and Turkey, and that many thousand more died.

If the above numbers is just for children and women then the plunder of able-bodied men must have been far higher given the attributes related to them, especially their being brave fighters for ambitious empire-builders (see Suliman 2000, Ibrahim 2002). Referring to one estimate, Beswick and Spaulding (2000:xiv) state, 'Arab slavers carried off two million of southerners from their homeland.' (See also Nyaba 2002).

However, even greater depopulation was due to the persistent condition of war between the Turkish regime and different Sudanese communities. During the Turkish reign, the *political factors* became prominent. The process of centralisation was not an easy one; it had made punitive campaigns against disobedient tribes the rule of the day. Killing as many people as possible earned soldiers a fortune, as Mohammed Ali of Egypt promised to the men enlisted in the invasion expedition under the leadership of his son Ismail. Nearly all of these men were mercenaries, according to Moorhead (1972:203). They were 'hired by the month, but it was probably not their miserable pay that made them enlist: it was the hope of loot and the promise Mohammed gave to them that he would pay fifty piastres for every human ear obtained in battle' (Moorhead 1972:203). This 'band of desperadoes' (Moorhead 1972:203) embarked on a profession of terror and certainly did not spare the ears of all those they could catch or who were in their reach. In their first encounter with the Shaiqiya people at the battle of Korti, the Turks turned victorious and certainly made a fortune from the human ears they collected.

About eight hundred men, mostly peasants, were left lying on the field, with the Turks running among them cutting off their ears... That night the inhabitants of Korti were massacred by the Turks, and the town was destroyed by fire. Some three thousand human ears were sent to Cairo and they were taken from the living as well as from the dead (Moorhead 1972:209).

Crucial to the success of the campaign of the “band of desperadoes” was that northern Sudan was thinly-populated and lacked strategic hideouts from which the resistance could launch counterattacks.

Following the Ja’aliyyin Uprising in 1822-23 (Warburg 1992), which peaked in the assassination of the commander of the invading troops, the notorious *Defterdar*’s<sup>8</sup> Avenge Campaigns took the lives of thousands of northern Sudanese. ‘The town of Metemma was first sacked and burnt, and then it was the turn of Damer and all the settlements along the Nile from Berber to Sennar’ (Moorhead 1972:217, see also Bakri 1998:13). Shendi, the capital of the Ja’aliyeen Kingdom was destroyed (Warburg 1992:2) and thousands of people fled the area to the east until they penetrated inside the current border of Ethiopia (Bannaga 2001:34, Moorhead 1972:217). Defterdar pursued Mek Nimir, King of the Ja’aliyyin, ‘up the Blue Nile, leaving an appalling trail of atrocities in his wake. All of the male prisoners he took were emasculated and the breasts of their women were cut off, the wounds being filled with boiling pitch to prevent the victims dying at once’ (Moorhead 1972:218). The loss among the Sudanese escaping out of the downstream RZ was enormous. ‘Some fifty thousands Sudanese had been killed in the process. It was the peace of death along the river’ (Moorhead 1972:218, see also Bakri 1998:13).

Mohamed Abdelkhalig Bakri (1998) in *Chronicle of Political Homicide in the Sudan (1821-1898)*, gives a brief view of the horrific massacres committed during the notorious *Defterdar*’s Avenge Campaigns. According to Bakri (1998:15), who provides accounts by reputable Sudanese historians such as Mekki Shbeika, Ahmed ibn al-Haj (*Katib al-Shoona*), as well as foreign historians such as Naom Shugair and Richard Hull, these campaigns, through procedures of extreme cruelty initiated the earliest form of state terror in the Sudan. Governor-generals who followed *Defterdar* were no better, especially Osman Bey Jarkis (1824-1825) and Ali Khurshid Pasha (1826-1838), who in order to collect taxes inflicted the most inhuman destruction on their Sudanese victims. Bakri (1998:15) notes that a wave of massacres commenced with Jarkis’ reign, with this ruler unleashing horrific campaigns in which villages were put under siege and large numbers of inhabitants of the Gezira massacred. Along with Katib Al-Shoona, he points out that escapees from the Gezira were traced and killed in large numbers. Naom Shugair (cited in Bakri 1998:15) notes that ‘the era of Osman [Jarkis] was one of desolation which caused the loss of about half of the inhabitants because of disease, impoverishment, manslaughter and injustice.’ The remaining groups in the downstream RZ would then engage in relentless out-migration with their target being the NRZ/upstream RZ.

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8. *Defterdar*, Mohamed Bey son in-law of Mohamed Ali Pasha who was in command of the military campaign which conquered Kordofan in 1820 and was ruling that region from whence he led his notorious campaign to avenge the assassination of his brother-in-law, Ismail Pahsa.

The terror unleashed an unprecedented exodus from the western bank of the Nile. Those who had survived the *Defterdar*'s Avenge Campaigns and the cruelties under the reign of Jarkis and Khurshid, notified above, and the persistent incidents of violence during the Turkish rule now made the trek to the remote regions of Bahr El-Ghazal and Darfur, instigating a new trend of large-scale population redistribution from the arid RZ to the NRZ and upstream RZ. This trend persisted for a long time, as terror prevailed almost throughout the Turkish rule – more than six decades of massacres and introduction of unprecedented means of torture and humiliation. The severely burdensome taxes the regime imposed put the Sudanese into utterly difficult conditions, and therefore prompted permanent resistance. To compel these untameable groups to pay taxes, more punitive expeditions were sent marching through the plains and forests, amounting to a regime of terror in an almost permanent state of war against the majority of the people under its mandate. For instance, the refusal of the Hadendawa, in the east, to pay taxes during this era made them an object of continuous military agitation (Mohamed Salih 1999:85). Similarly, several expeditions were sent to the western plains, causing many northern Sudanese to leave their homelands and take refuge in areas the Turks had not yet conquered.

Devastation, however, took a similar toll in the upstream RZ and the hinterland NRZ. While all Sudanese regions under the Turks were suffering, the heaviest brunt fell on southern Sudan and the Nuba Mountains, which became examples of the atrocities of these adamantly brutal rulers. 'The Shilluk had to pay heavy cattle taxes and supply slaves to serve as soldiers for the expanding Sudanese garrison' (Ibrahim and Ogot 1990:366). Similarly, the Nuba were conscripted by the Turks to serve as soldiers far from their homeland in the Arab Peninsula, eastern Europe, Palestine, and even in Mexico (Suliman 2000:213).

While upsetting the population was the norm, the greatest disturbance of the population distribution map, which affected almost all parts of the country, took place during the last years of the Turkish regime. It was then that punitive campaigns turned into full-scale war. To resist an inhuman form of rule, Sudanese communities from the Hadendawa in the east (see Mohamed Salih 1999:85) to the Jaing in the south (see Ibrahim and Ogot 1990:371) besides groups from central and western Sudan, shouldered nation-wide resistance – the Mahdist revolution, which cost the lives of thousands of warriors. Its longer term consequences would be even more costly. During the Mahdist revolution, the Turks launched several campaigns against the Mahdist armies. The spectacular example was the campaign sent under the command of Hicks Pasha against the embryonic capital of the Mahdist State – El Obeid. In the battle of Sheikan, on the outskirts of El Obeid, the invaders, originally 10,000 soldiers, were annihilated save 200 or 300 (Moorhead 1960:212, see also Warburg 1992). Against the firearms, the Mahdist army of 50,000 warriors equipped with swords and spears must have undergone more losses, not only in Sheikan but also in many other battles (see Moorhead 1960:212). The loss to Egypt during the Mahdist revolution amounted to 79,701 officers and soldiers (Galatoli 1950:128) and likely cost the Sudanese fighters several times this

figure, given the latter's traditional weapons against the gunpowder available to the former.

Generally speaking, the pattern of population movements, during the Turkish rule, was from the arid downstream RZ (Khartoum and the northern and central regions) to the western NRZ (Kordofan and Darfur) and the upstream RZ's regions of Bahr El-Ghazal and Upper Nile. The end destination of Bahr El-Ghazal and Darfur became the refuge for those escaping the terror of the regime, its cruel technologies of torture and tough tax regulations. The process included the riverain *jellaba*, who first welcomed the Turkish regime for installing security (Warburg 1992:2). After 1821 increasing numbers of *jellaba* Arabs began to arrive in the Nuba Mountains, escaping the Turko-Egyptian rule (Saavedra 1998:227-8, see also Beck 1998:265). The number of escapees increased throughout the decades. 'The period between 1840 and 1860 "saw a steady stream of refugees from the Turco-Egyptian north entering Shilluk territory"' (Ibrahim and Ogot 1990:366, see Beck 1998:265).

There was yet another factor affecting population distribution during the Turkish rule in the recipient areas. The mass exodus of groups from the north contributed to instability in the receiving areas, further disturbing population distribution. It is likely that gangs of slave captors from the north made use of the new population map (and the considerable size of their kin tribesmen) and tried to force their deals on the local population of the upstream RZ. It was during this period that, in retaliation for the resistance of the Shilluk king, the slave traders destroyed Fashoda, the Shilluk's royal capital and devastated the whole region from Aba Island to the mouth of the Sobat River (Ibrahim and Ogot 1990:366). The outcome was that the 'Shilluk population, both bovine and human, was *dwindling rapidly*' (Ibrahim and Ogot 1990:367-8, italics). The effect was enormous in this region. 'Of all the peoples of southern Sudan, many weak and defenceless groups could only put up feeble, if not futile, resistance to the traders' raids. Many either being enslaved or killed in battles, with the result that several groups "nearly vanished as cohesive political or social units"' (Ibrahim and Ogot 1990:368).

Similar to the Shilluk Kingdom was Kordofan (in the NRZ), which witnessed waves of immigrants from downstream RZ. However, these were more often fortune hunters than escapees. Kordofan, in the main, became the opportunity niche for those partly allied with the Turkish regime (Chapter 4). Theoretically speaking, the flexible domain that had opened up during the Funj rule, by now had some restrictions which disturbed self-organising mechanisms. Thus, the causes of population movements during the Turkish era ranged from fear of the brutal regime and its system of taxing, tracking, and punishing, to the search for opportunity niches that the regulations of the new regime made accessible for a few groups. Groups that collaborated with the Turks acquired the upper hand in reshaping the frontiers and their resources. The remnants of immigrants from the Nile Valley till this day are found in parts of the oases (*Kheiran*) area in Bara District, North Kordofan. According to Manger (1980:134), 'descendants of former migrants from

Dongola, along the Nile', the Jawabra today 'control most of the larger oases in the south. To the north of this group is the Ferahna, a tribe within the former Dar Hamid federation. They were the original owners of the whole area, but are today limited to the northern part.'

Almost simultaneous with migrations from the east – from the Nile Valley, Kordofan also witnessed migrations from the west, which involved groups such as the Burgo and Mima (Babiker 1986). This, however, took place in small numbers compared with earlier eastward movements such as that of the Hamar tribe. 'Ignatius Pallme, who was in Kordofan during the years 1837-38, spoke of the Hamar as having immigrated several years earlier from Darfur to Kordofan' (Babikir 1986:381). This movement probably was facilitated by the alliance that was then struck between the Hamar and the Turkish regime. Unlike most of the nomadic tribes in Kordofan, the Hamar started to settle and gradually abandoned their nomadic life and certainly they were among the few who moved against the tide of being at loggerheads with the Turks. They were good for the regime because they produced its foreign trade's top crop – gum arabic.

During the Turkish rule, groups who migrated earlier served as the network that facilitated new waves of kin migrants to recipient areas in Kordofan. The annexation of Darfur in 1874 brought another wave of immigrants both to Darfur and its dominion in Kordofan. Along with Manger, Al-Karsani (1998:186) views the annexation of Darfur as leading to an increased number of immigrants from northern Sudan (i.e. from the Nile Valley) to the area, and the town of Al-Nahud in West Kordofan gained some commercial importance. According to him, the expulsion of many Shayqiyya traders from southern Sudan in the 1870s and their settlement in Al-Nahud reinforced this trend.

Given the above discussion, we can embark on a conclusion that a relative concentration of population did take place in the NRZ and the upstream RZ paralleled by a deconcentration of population in the downstream RZ. As we shall detail later, around half of the population of Sudan in the first two decades of the twentieth century was found in the upstream RZ's region of Bahr El-Ghazal. By 1820 it is likely that between three and four million people had escaped from the downstream RZ to the upstream RZ/NRZ, though many perished on the risky and exhaustive trek. Al-Sayed Yosif Nasr (1979), in his book *Egypt's Explorative Efforts in Africa during the Nineteenth Century*, helps us estimate the number of escapees. Following the Nile exploration expeditions and as an outcome of them, Nasr (1979:49) points out that the viceroy of Egypt instructed his governor of Sudan to allow to return home Sudanese refugees who had deserted around 650 villages to escape onerous taxes imposed by the Turks. Referring to a message from the viceroy to the governor, dated 10.11.1237 Islamic calendar (the year 1822) the former instructed the latter to provide lists of returnee numbers, emphasising that it was not in Egypt's policy to cause such scattering of the inhabitants of this country. What constitutes a village might have caused a dilemma in giving an acceptable estimation of displaced people at the time. However, fortunately, the same author, Nasr (1979:34),

helps us to overcome this dilemma. He notes that Ahmed Pasha Abu Wadan, who was in command of the explorative expedition sent in 1840 to eastern Sudan, namely to the Taka Region, mentioned that Taka was comprised of a cluster of villages in the range of 15 to 20 villages. Notably, Abu Wadan mentions that each of these villages was inhabited by about 6,000 to 7,000 people, namely *urban* Arabs while the *nomads* inhabit the valleys and forests lying towards Mitsawa and Suakin (on the Red Sea coast). Given this village size, the population of the said 650 deserted villages would, therefore, be in the range of 3.9 to 4.5 million people.

This deliberate policy of terrorising, therefore, depopulating northern Sudan was accompanied by an apparent policy of not using Nile water for irrigation inside Sudan. The irrigated agriculture adopted during the Turkish rule took place along non-Nilotic rivers, namely in the NRZ region of eastern Sudan. Other forms of large-scale agriculture were rainfed, such as in southern Sudan. Avoiding irrigation from the Nile was probably what made agriculture, during that era, very limited in scale and rather marginal as an activity. Moreover, the havoc that the Turks created probably did not create conditions conducive for investment in agriculture. Even the two above-mentioned areas did not attract immigrants from remote regions, due to the many administrative and natural barriers that made job seeking in the new agricultural frontiers a rather impossible task. Southern Sudan, in particular, was infested with slave traders and marauders.

These accounts, probably, provide for a much earlier form of “water war” waged by Egypt against Sudanese kingdoms and, therefore, give us some clues that after the 1820s Egypt focused on controlling the Nile and prohibiting irrigation upstream. In other words, the Khedive’s strategy of putting under control all of the Nile tributaries was not necessarily perceived in light of the imperatives of the 1870s as it may appear to us; rather, the idea had been fermenting from the first day the Turks stepped into the Sudan. The Turks adopted deliberate policies of overwhelming terror which, besides group massacres, included bizarre forms of inflicting homicide, such as killing by subjecting the victims to hunger and thirst, burning alive, drowning, and many other means of homicide (for details see Bakri 1998:38, 47-51). It also included forms of maiming, some of which were mentioned earlier, such as mutilating ears and cutting women’s breasts, as well as inventing cruel technologies of torture, fines for minor offences, and flogging (see Stiansen 1998:80). In addition, the Turkish terror technologies included enslavement of and selling members of defeated Arab elite families.<sup>9</sup> Sudanese people had been on the run for six decades. They left behind lands that they had prepared for irrigation, from which they had produced for local consumption and for export to neighbouring regions (details later). The momentum of expansion in irrigation in the downstream RZ was brought to a halt by the Turkish invasion and the largest part of the region would not resume it again until the mid-1920s.

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9. Example of this is what Ahmed Pasha Abu Wadan did with the family of Abu al-Reesh, the sheikh of the Hamada tribe of south Butana (for details see Bakri 1998:31-2).

### 6.2.3 Population movements during the Mahdist reign

Processes that were halted by the Turkish invasion, particularly irrigation along the banks of the Nile, were resumed after a national rule was installed. However, Mahdism replicated the experience of the Turkiyya, therefore, jeopardising what should have sustained it as a political system. The cruelty of the Mahdist rule served again to protect the Nile from undergoing water scarcity, paradoxically, even though the Khalifa wanted to bring large numbers of people to his downstream RZ-seated capital of Omdurman. Thus, in the aftermath of ridding the country of the cruel Turkish regime, the population distribution during Mahdism was no less disturbed.

The population of the Sudan, during Mahdism, dwindled dramatically due to wars and famines caused by the disruption of the production process, but also importantly because of massacres directed at tribes that refused to migrate to Omdurman (for details see Bakri 1998:78-80). Five years, after the Mahdists came to power, the total population of Sudan was 5.47 million (Lahmeyer 2002a). According to estimates by Slatin Pasha, Governor of Darfur during the Turkish rule and Inspector General of the Sudan after the re-conquest, 'of the original nine million inhabitants of the Sudan, about 75 per cent were exterminated during the Khalifa's rule. The continual wars and the slave trade destroyed many thousands every year, diseases such as smallpox and syphilis were endemic, and now in 1889 the country was overwhelmed by famine' (Moorhead 1960:332, see Gibbons 1918). Human losses during the early years of Mahdism, however, cannot be seen in isolation from the Turkish legacy of exploitation and cruelty, which had for decades reduced the numbers of able-bodied and reproductive age-groups through trafficking and conscription.

Although the upheavals during the revolution might have made these population losses seem natural, the new regime itself contributed significantly to the diminishment of the population. The Mahdist state engaged in an expansionist policy, which made war and mobilisation for war almost the norm throughout its reign. While its campaigns against Ethiopia ranged between success and failure, with thousands of soldiers died, the campaign against Egypt was disastrous with a large number of fighters annihilated (see Moorhead 1960:332).

The most catastrophic effect was that of famines, which occurred largely due to coerced population distribution. In the 1880s, upon the orders of the Khalifa, large groups of population moved from further western Sudan into Omdurman, the capital of the Mahdist state. In order to safeguard his position, the Khalifa had caused a significant drop in the numbers of population in the western parts of the country by bringing his kin supporters into Omdurman and other military garrisons (Mohamed Salih 1999:57, see Bannaga 2001:35). The figure of this group was large enough to swell the capital Omdurman, which counted during this period 150,000 persons or more (Moorhead 1960:283). According to Mohamed Salih (1999:57), in addition to the low water levels in the Nile and droughts that hit other

parts of the country, bringing in the population from western Sudan was an added factor behind the famine. Known in the Sudanese tradition as *sanat sitta*, the 1889-90 famine was reported to have been survived by only 35 to 50 per cent of the population of the capital Omdurman (Mohamed Salih 1999: 57). The political contest for resources and the weakening of foes was another factor that contributed to an inefficient food production.

The population distribution map during the Mahdist era had yet to undergo another disturbance in which the political factors contributed the most. The administrative and military controls initiated by the Mahdist state resulted in large-scale migrations, which resulted in the disintegration of the system of territorial clans and the shattering of tribal relations (Adam 1987:20, see Babiker 1998:200). At the local level, the divide of Mahdists/non-Mahdists (or contest among notables to show stronger allegiance to Mahdism and render others foes) probably led to numerous displacement incidences in different regions. Two types of displacement for political reasons were observed; i.e. displacement of a tribe to one or some of its clans and displacement by the host communities of immigrants who had been accommodated and settled for long time. The first type could be found, for instance, in the expulsion of the non-Mahdist Humr from the Dar Missiryya, who were accommodated by Chief Arob Biong of the Ngok Dinka in the lush area in Baralil (Deng 2000:135). An example of the second type is the expulsion of the riverain Danagla immigrants from the Dar Hamid area in northern Kordofan (Awad 1987).

Movements of population during Mahdism were marked by a major shift: reversal of the millennial pattern described earlier. After more than a thousand years, the first mass movement and settlement of population into the downstream RZ took place in the form of warriors in the early 1880s and other tribal supporters in the late 1880s.

However, during Mahdism, the pouring in of nomad tribes from the west was counteracted by an out-migration of escapees from Gezira and its surroundings. This happened when disloyal groups from the downstream RZ were dispossessed of the vast cultivable land they owned and either massacred or forced to migrate (Awad 1987:40, see also Bannaga 2001:35), indicating once again the persistence of the millennial pattern. With new escapees from the Mahdist domains, movement and settlement in the upstream RZ was further reinforced. Bahr El-Ghazal, in this respect, continued to be the safe heaven for escapees.

### **6.3 The making of the economic core and reversal of the millennial population distribution pattern**

Significant changes in the landscape in the Sudan had started to take shape by the beginning of the twentieth century. We shall examine these below in two intervals (the British reign and the post-independence era), which in fact, were largely a continuum, rather than being distinct historical epochs.

### 6.3.1 Population distribution during the British rule

The disturbance of population distribution entered a new stage with the advent of the British colonisation at the end of the nineteenth century. Condominium rule succeeded in curbing one of the major factors in depopulating the Sudan, i.e. slavery (see Mohamed Salih 1999:113). In fact, ‘in 1914 the official report announced that slave traffic was “almost impossible” in the Anglo-Egyptian Sudan’ (Gibbons 1918:13). However, Condominium rule maintained other factors, which continued the depopulation process in northern Sudan, namely the punitive expeditions and consequent famines and epidemics.

During British rule, as shown in Table 6.1, Sudan’s population dwindled rapidly. In 1922, marking the completion of the pacification process in northern Sudan, the total population of the Sudan was 22 per cent less than its size in 1900 – the second year of the invasion. The invasion and punitive campaigns contributed to reduce the population of the Sudan as well as to depopulate the country’s northern parts. The invading army had swept the thinly-populated northern Sudan with little significant resistance. However, farther southwards, the resistance became spectacular and the engagement of this firearms-equipped army with the Sudanese resistance proved disastrous for the latter (see Moorhead 1960). The Battle of Karari in 1898 crushed the Mahdist army, costing the lives of 11,000 fighters defending the capital Omdurman.

Punitive campaigns on the other hand, covered large regions. In the Nuba Mountains, for instance, several revolts took place between 1905 and 1919 and the Nuer tribe continued to resist the alien rule until 1929 (Tvedt 1992a:69, Frantz 1977:184). Accordingly, military expeditions were sent in punishment. ‘In 1912, there was an expedition into Mongalla, and an outbreak in southern Kordofan. There were *nine* distinct military operations *during the course of 1914*’ (Gibbons 1918:24, italics added, see also Ali 1988:24). During the World War I, the tactic of “punitive” patrols’, which the government pursued in order “pacify” the Nuba Mountains’ in the early part of the Condominium rule ‘changed to “massive military campaigns of deliberate ferocity” to root out all resistance. These

Table 6.1: Sudan’s population (1890-1955)

Year	Population	Year	Population	Year	Population
1890	5369	1927	7006	1941	6370
1895	5477	1930	7532	1945	8744
1900	7532	1931	5687,8	1946	7498,1
1905	5873	1934	5815,4	1950	9322
1910	6172	1935	7916	1951	9489
1915	6487	1936	5697,3	1952	9662
1920	6818	1937	5945,6	1953	9839
1922	5860	1938	6186,5	1954	10022
1925	7166	1939	6342,5	1955	10210
1926	6469	1940	8320	1956	

Source: Lahmeyer (2003).

campaigns were not just directed at tribal leaders, but sought to inflict maximum damage on the people at large by disrupting cultivation and destroying villages' (Kevane and Stiansen 1998:13). The resistance of different Sudanese communities, however, continued with some groups resisting government control until the late 1920s. In this process, many sub-state actors outside the political coalition were destroyed, which contributed to their historical vulnerability.

In addition to the loss of lives in the wars waged by the regime against the national resistance, three famines took many lives. While the dwindling population during this period provide evidence of the effect of the aggressive regulations, in the following period, particularly in the second half of the 1930s, population increases gained momentum. By the early 1940s, the country exceeded its population size for the year 1900, and from the second half of the 1940s it maintained a steady increase until now. During this era, the measures 'passed to halt the occurrence of widespread epidemics and famine' (Ahmed and El-Battahani 1995:200-201) contributed to this steady population growth. Those regions decimated by enslavement and with their populations being squeezed onto smaller marginal lands, such as the Nuba Mountains, were now overtaken by dramatic rates of population increase. The Koalib group grew from 10,000 in 1912 to 44,285 in 1956 and the Nyimang grew from 8,400 to 33,473 for the same years (Al-Karsani 2000:40), a 343 per cent and 298 per cent increase in population, respectively.

During the British era the population distribution map witnessed severe disturbance, attributed in the first two decades to the punitive campaigns, famines (Chapter 5), and epidemics (resulting from disturbance of the social and cultural setting), and the economic designs which radically transformed the fortunes of regions (Chapter 3).

Population movements during the British era, especially in the first two decades, seem to repeat the pattern that prevailed during the Turkish era, and in the following decades it replicated that experienced during the Mahdist reign. Fear of the brutality that accompanied the punitive campaigns raised the Sudanese people's memory of an earlier trauma. Their reaction was to flee the "second Turkiyya" as they had the first. 'Large number of ethnic groups, farmers and pastoralists moved into areas which were impossible for government troops to reach and secure, while at the same time, inter-ethnic conflicts and the continuous fear both of slave traders and of high taxes created great uncertainty among rural population' (Mohamed Salih 1999:58).

By the time of the invasion *Awlād al-Balad* had allied themselves with the invading army, while *Awlād al-Arab* were labelled aliens. 'During the early years of Anglo-Egyptian colonial rule, many of the Western Sudanese tribes which had migrated to riverain Sudan returned to their home areas in Darfur and Kordofan and established large settlements around their tribal chiefs' (Mohamed Salih 1999:57). A large number also escaped in order to avoid staying in the areas of the fighting that was then raging between the invading armies and the Mahdists (Bannaga 2001:35).

As we shall see later, some groups from the downstream RZ might have moved to Bahr El-Ghazal Region in the wetter upstream RZ, returning to the old pattern of escaping pressure from RZ-seated governments and hiding in this remote region.

However, the largest population movements during the British rule were *economically* induced, either in the form of displacement of those whose lands were “captured” by the state or who became immigrants or forced labourers (for details see Shaaeldin 1987:4, Ahmed 1986:9). The economic designs under British rule induced two types of population movements with the central RZ becoming both a population-sending and population-receiving region.

In the twentieth century, in addition to previous technologies exercised by the centralised regimes of Turkiyya and Mahdia, tribes moved out of the downstream RZ due to expropriation of their land (Chapter 4). Resource capture and the punitive expeditions associated with it in the 1900s and 1910s (see Pollard 1984) and large-scale agricultural expansion in the 1920s led to movements out of the downstream RZ. In the establishment of the Gezira Scheme, several groups lost their land to the development of the river. This meant depopulating certain areas and overpopulating others. The area of the Gezira Scheme, together with some areas with pump schemes which were brought together into large agricultural projects, had all been homelands of pastoralists and traditional farmers (see Shaw 1987:152-3, Pollard 1984:169). The area of the Gezira Scheme in particular had a high population density. ‘Before the advent of the British, the Gezira was quite highly populated but the evidence indicates that the population had stabilised at or below the carrying capacity of the environment. This is in contrast to the British claims that the Gezira scheme was set up in a flat, unvegetated, unpopulated, desert region’ (Pollard 1984: 169). The habitability of the area south of the confluence of the Blue and White Niles – being the domain of and housing the capitals of the Southern Christian Kingdom of Alwa and the Funj Kingdom – is unquestionable and so should its being encouraging for population settlements and livestock rearing. Abu-Salih, a thirteenth-century traveller, describes Alwa, according to Pollard (1984:168), as a large kingdom with upwards of 400 churches and its capital Soba as being renowned for its market. During Funj rule, several important settlements flourished in this region (Davies and Abu Sin 1991:3). The region remained prosperous, probably until the late eighteenth century when it was described by the first European travellers to visit it. By the end of the 1690s, passing through the Gezira region, Poncet and Brevedent described “pleasant forests of flowering acacias full of little green parrots”, “with fruitful and well-cultivated plains”; they called it “God’s country (*Belad Allah*) by reasons of the great plenty” (Pollard 1984:169). Further evidence of the habitability of this region is found in its economic characteristics, being ‘an important grain producing and exporting area’ and where in the nineteenth century, there was ‘a large native market for native cotton, which was also transported to Northeast Africa’ (Shaw 1987:153) (Chapter 3).

The British policy of concentrating economic development in the central RZ was a factor in displacing the then traditional farmers and pastoralists (Chapter 4). Evidence of this is provided by the fact that of the total population of the area of the Gezira Scheme only 30,216 people (11.6 per cent) – the categories of rights-holders and local inhabitants (detailed in Table 10.1) – remained inhabitants there. The total population of Gezira Province in 1922, three years before establishment of the scheme, was estimated at 259,400, whereas the Sudan as a whole in the same year had a population of 5.9 million (Table 6.2). Given the conditions then prevailing in the region the figure of 259,400 people could be considered credible, as it represents only 1/22 or 4.4 per cent of the total population of the country occupying a territory of 31,600 km<sup>2</sup> (1.2 per cent of the 2,609,800 km<sup>2</sup> as the total territory of the Sudan). This region was thus likely among the few regions in the Sudan with high population density. The area claimed for irrigation during this period (more precisely by 1931) was 450,000 hectares (FRD/LC 2004) – equal to 4,500 km<sup>2</sup>. This is 14.2 per cent of the area of the Gezira Province, which should therefore have on average hosted 36,835 people. This means some 7,000 people were displaced from their lands, not to mention those who the new system paralysed, causing them to decide to leave the area altogether and migrate to surrounding environs or to places far away in the NRZ and upstream RZ. These populations added to those repelled by the Turks and the Mahdists, settling largely in Kordofan and Upper Nile. The out-migrants

Table 6.2: Population of provinces in the Sudan in 1922 and 1931

Province <sup>(a)</sup>	1922 <sup>(a)</sup>	1931 <sup>(a)</sup>	1922-31 (%) <sup>(b)</sup>	1938 <sup>(a)</sup>	Administrative divisions before 1938 <sup>(b)</sup>
Bahr al Ghazâl	2500.0	697.0	-72.2	Bahr El-Ghazal	Bahr El-Ghazal
Berber	171.4	168.2	-2	Northern	(Berber + Dongola + Halfa)
Dârfûr	523.9	675.9	29	Darfur	Darfur
Dongola	151.8	158.1	4		
Fung	114.0	269.4	110		
Halfa	40.7	52.3	29		
Kassalâ	98.0	354.2	81	Eastern	(Kassala + Red Sea)
Khartoum	186.4	278.1	49	Khartoum	Khartoum
Kurdufân	486.6	1080.	34	Kordofan	(Kordofan + Nuba Mountains)
Red Sea	98.0	0			
IparMongella	213.3	348.7	64	Equatoria	Mongella
Nuba	317.8				
White Nile	190.0	477.4	151		
Blue Nile	259.4	496.9	92	Blue Nile	(Blue Nile + White Nile + Funj)
Upper Nile	501.3	607.9	21	Upper Nile	Upper Nile
Sudan	5852.6	5664.1			

Source: (a) Lahmeyer (2002); (b) author.

were increasingly replaced by people who were previously outsiders to the area but who became its new inhabitants (detailed in Chapter 8).

While there are no adequate figures about groups' out-migration from the central RZ in the first two decades of the twentieth century, it is clear that several clans used their historical networks and moved into neighbouring regions. Several groups moved from the White Nile (downstream RZ) into north Kordofan (NRZ) to join their former kin. For instance, the Danagla who were repelled by the Mahdists from Dar Hamid returned. This time, in addition to their economic interests, they brought political power being the most influential faction in the administration of Bara District. Tribes dwelling between the two rivers pushed southward until they entered the Upper Nile Province in southern Sudan. Generally speaking, the out-migrants from the downstream RZ during this period largely settled in the remote regions of southern and western Sudan, i.e. the upstream RZ and NRZ, respectively.

Under British rule, population redistribution became dramatic, taking the form of localised movements and resettlement, including villagisation policies (Chapter 7) as well as regional population movements. However, the largest wave of immigrants who would engage in irrigated agriculture was that coming from the west into the central RZ. The millennial pattern of populations migrating out of the downstream RZ – which in the past had probably undergone discontinuities – was, by the beginning of the twentieth century, completely transformed, with the downstream RZ becoming recipient to population from the NRZ and the upstream RZ. One decade after the coming of the British and due to innovations in the means of production, scarcity of land was overcome by increasing land productivity and reclaiming or colonising more of it; thus, migration and settlement restrictions were lifted, interestingly, mainly for non-Sudanese.<sup>10</sup> In fact, after around 1910, large groups of settlers from West Africa as well as from western Sudan (until then not part of the Anglo-Egyptian Sudan) were encouraged to settle across the savannah belt and in the central RZ. This marked the beginning of the second largest wave of population movement in the Sudan after the seventh-century Arab tribes' immigration. The most important "event" accelerating the frequency and multiplying the number of immigrants was the establishment of the Gezira Scheme. 'Given the centrality of the Gezira Scheme and of cotton in the economy, its influence extends far beyond its geographical boundaries. At its peak of geographical influence, in the 1930s, the Gezira attracted people up to 3,000 miles from across the Sahelian belt in Northern Nigeria, Chad and Senegal' (Barnett and Abdelkarim 1991:6, Shazali 1992:120). In 1924, the year before the actual commencement of phase I of the scheme, the number of westerners who settled in the area rose to 4,000; then to 6,000 following the start of the scheme three years later, and reaching 15,000 settlers in 1929. Abbas Abdelkarim

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10. Non-Sudanese, during this era, include people from Darfur whose sultanate was not yet incorporated under the Condominium rule.

(1992:79-80), who noted these figures, states, 'Between 1929 and 1946 the number of settled labourers tripled, while that of the seasonal labourers multiplied fourfold. From 1954 to 1980 the number of settlers in the Gezira labour camps rose from 59,000 to 169,992.'

The number of westerners who migrated to central Sudan is certainly much larger than that of migrants to Gezira alone. Worthy of mention here is that the number of West African migrants reached about 10 per cent of the total population of the Sudan in 1956 (Galal al-Din and Elmustafa 1979:97, Shazali 1992:120) – more than a quarter of the number of the Arabs in Sudan for the same year though the latter came to Sudan more than 12 centuries earlier. According to Duffield (1979), most of the West Africans engaged as labourers in the irrigated schemes. About two decades later, their number leapt dramatically. According to Mohamed Hashim Awad (1977:313), 'Since independence, no reliable figures have been compiled on immigration from west Africa.' Awad continues to say, 'Only a rough estimate of the number of immigrants is available from records of the Ministry of Interior, which suggests that they number around 3 million, i.e. about 17% of the population. The same source indicates that Nigerian immigrants are around 2 million' (See also Waterbury 1979:9).

Outside Gezira and the central RZ in general, migration for labour took place in eastern Sudan, where the NRZ Beja group migrated to the Gash and Toker schemes in the southern parts of Kassala Province (Mohamed Salih 1999:58). The banning of slavery also lifted the "siege" on some communities that had been under threat, such as the Nuba who migrated from the tops of the Nuba Mountains to the surrounding plains (Mohamed Salih 1999:58, Al-Karsani 2000). At a local level, people moved closer to water sources that the colonial regime initiated (Chapter 3).

A relatively minor wave of migration mostly for work in other sectors took place, while that of West Africans was going on. Salah Shazali (1988:188) notes that 'in the mid-1920s the Sudan witnessed a "heavy immigration" by skilled workers from Asia Minor, particularly of Greek and Armenians, induced by the collapse of the Ottoman Empire' (see also Shazali 1992:119). This represented a transitional period in which the downstream RZ simultaneously sent out migrants and received others.

By the early 1930s, in addition to the continuation of immigration of West Africans, the downstream RZ received large groups of population from within the Sudan. Following the completion of the pacification process in northern Sudan, waves of returnees from the then not yet pacified remote upstream RZ and also from the NRZ now found a secure domain for resettlement in the downstream RZ. These returnees were descendants or members of groups repelled by the downstream RZ-seated regimes in the period between 1820 and the 1920s. If anything, this return proves that it is very difficult to deprive large groups of population from the sources of water they used to benefit from, whether this deprivation is over a long or short period of time.

Thus, the largest population movement that went unnoticed in early 1930s was the one out of the upstream RZ into the central RZ. While the Gezira was sending out waves of nomads and traditional farmers, the former major refuge of decedents and escapees – Bahr El-Ghazal Region – also began sending out its relatively crowded population. Given the large number of groups displaced from northern Sudan in the nineteenth century and early twentieth century who settled in Bahr El Ghazal, it is therefore not surprising that in 1922, Bahr El-Ghazal, though in terms of territory size third after its two neighbours Darfur and Kordofan, and only a little larger than its eastern neighbour Upper Nile Region, had a population larger than these three regions combined (Table 6.2). The remote southern region was not only a mysterious frontier for the downstream RZ-seated centralised regimes in the north, but it was also a place where there were other warlords who could offer greater refuge than the chaotic situation under the Turk mandate.<sup>11</sup> It also continued to serve as a refuge for groups escaping the brutality of the Mahdists between 1885 and 1898 and the punitive campaigns waged by the British until the early 1920s. It is possible to argue that Bahr El-Ghazal was relieved of its relatively large population only after pacification in the north became a reality in early 1920s. Figures of population in the region some nine years later (between 1922 and 1931) showed a dramatic decrease. Apparently, the groups migrating from Bahr El-Ghazal settled in its neighbourhood. Population figures from the regions closest show a significant and abrupt increase following 1922. Comparatively, regions far to the north maintained their own gradual increase of population.

Only Bahr El-Ghazal and Berber provinces showed a decrease in their population between 1922 and 1931. All other regions grew in population size (Table 6.2). Of its large population of 2.5 million in 1922, Bahr El-Ghazal had lost to other regions 72 per cent by 1931. This dramatic decrease was paralleled by a dramatic increase in the White Nile Province with 151 per cent and in Funj Province with 110 per cent increase in their population. Meanwhile, with the exception of Mongella Province, which witnessed an increase of 64 per cent, the population of Bahr El-Ghazal's immediate neighbours was rather low compared to those of the White Nile and Funj provinces. Kordofan to the north and Darfur to the west of Bahr El-Ghazal increased their population by 34 per cent and 29 per cent, respectively, while Upper Nile to the east grew by only 21 per cent. Given that the significant increase of population in Khartoum (49 per cent) can be attributed to the development in government apparatus, the main recipient regions of the population from the upstream RZ region of Bahr El-Ghazal were the downstream RZ

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11. It was surprising that even Gordon, the Khedive's governor-general in Sudan, had the idea that the slave traders were better than the Turks in managing their subjects' affair. Moorhead (1960:190) clearly expresses this while referring to the Gordon's challenges in the Sudan. He states that 'Men like Zobeir might be villains, but they knew how to govern their territories better than the Turks and the Egyptians who had come into the Sudan from Egypt and who committed their own brand of atrocities in the name of civilization.' (Moorhead 1960:190, Beswick and Spaulding 2000:xiv).

provinces of White Nile, Funj, and Blue Nile. While the Blue Nile and Kassala provinces might have increased due to the significant numbers of West African and western Sudanese immigrants, the provinces of the White Nile, Funj, and Mongella, must have received significant numbers of people moving out of Bahr El-Ghazal. Given that the total population size of these provinces was comparatively smaller, it is likely that a significant portion of Bahr El-Ghazal's population moved into Kordofan and to a lesser degree into Darfur besides the above-mentioned provinces. This is likely the case as these two regions had already started sending migrant labourers to the central RZ.

The groups of population who were moving into the central RZ were largely "Arab" returnees who realised that political stability was gaining more ground in their former regions than in the not yet pacified Bahr El-Ghazal. The latter had also been utterly destabilised due to punitive campaigns, which continued beyond the pacification in the north until the end of the 1920s and into the early 1930s. An important development during this period was in the "closed districts" policies, which restricted the movement of Arabs into the whole of southern Sudan and other pockets in the country. Keen to prohibit Arabisation in the South and other localities, it is almost certain that the British adopted policies of eviction, which could also have contributed to the population deconcentration and movement out of Bahr El-Ghazal. Following this period, i.e. from 1922 to 1931, no unusual redistribution trends were observed compared to those that took place during this period. The pattern that prevailed afterwards was governed by *voluntary* migration to irrigated schemes. This dominated the migration scene until the late 1970s.

Now the millennial pattern of population movement into the NRZ and upstream RZ was finally reversed. Kordofan, a major population recipient region for more than a millennium, from the seventh century until the 1920s, ranking second to the extraordinarily-populated region of Bahr El-Ghazal in 1922, started, following 1931, to lose inhabitants while the central RZ started to gain in population numbers. The year 1937, when Kordofan and the central region had the same population size of 1.2 million (Table 6.3), signalled the start of this trend where the latter started to gain in population size at the expense of the former. Aggregate population figures for northern Sudan (downstream RZ and NRZ) and southern Sudan (upstream RZ) (Table 6.4) show the dramatic population shift from the latter to the former. Northern Sudan increased its population by 110 per cent between 1922 and 1931, while southern Sudan lost 37 per cent. Population increases in northern Sudan were uneven between the downstream RZ and NRZ (Table 6.4). The downstream RZ increased by 116 per cent compared to the NRZ, which increased by 105 per cent. The decrease in the population of the upstream RZ made the increase in the (whole) RZ very small (2.3 per cent) compared to that in the NRZ. This gain/loss relationship became apparent only later in the 1980s when the gap between the two zones became more dramatic. The population was attracted not only by the irrigated schemes – the creation of the new opportunity niches in the central RZ and the negligence of the niches of Kordofan

Table 6.3: Population and percentage increase by region (1922-48)

Region	Population (thousands)				% increase							
	1922(a)	Rank	1931(a)	Rank	1938(a)	Rank	1948(a)	Rank	1922-31	1931-38	1938-48	1922-48
Bahr El-Ghazal	2500.0	1	697.0	3		5	714.5	5	-72.12	-	-	-71.42
Blue Nile	563.4	3	1244.0	1	1305.2	1	1465.4	2	120.80	4.92	12.27	160.10
Darfur	523.9	4	675.9	4	763.3	4	882.8	3	29.01	12.93	15.66	68.51
Kassala	196.0	8	354.2	7	421.0	8	717.9	4	80.71	18.86	70.52	266.28
Equatoria	213.3	7	348.7	8	1192.4	3	590.9	8	63.48	241.96	-50.44	177.03
Khartoum	186.4	9	278.1	9	255.5	9	329	9	49.20	-8.13	28.77	76.50
Kordofan	804.4	2	1080.0	2	1232.8	2	1518.9	1	34.26	14.15	23.21	88.82
Northern	363.9	6	378.6	6	524.5	7	616.3	7	4.04	38.54	17.50	69.36
Upper Nile	501.3	5	607.9	5	491.8	6	711.5	6	21.26	-19.10	44.67	41.93
Total	5852.6		5664.1		6186.5 <sup>(b)</sup>		7547.2		-3.22	9.22	21.99	28.95

Source: (a) Jan Lahmeyer (2002).

(b) The population of Bahr El-Ghazal is not included in this figure. Given that the following decade marked the beginning of steady increase in the population of Bahr El-Ghazal, the population for 1938, most likely, was similar to that in 1931 or a few hundred more or less. Assuming that this is the period when Bahr El-Ghazal started to pick up, or at least maintained the same size of population, then the total population of the Sudan likely stands at 6883.5 thousand.

Table 6.4: Northern/southern Sudan and RZ/NRZ population distribution (1922-48)

Region	Population (thousands)				% increase	
	1922	1931	1938	1948	1922-31	1922-48
Northern Sudan	2638.0	4010.8	4502.3	5530.3	52.04	109.64
Southern Sudan	3214.6	1653.6	1684.2(a)	2016.9	-48.56	-37.26
Northern Sudan RZ	1113.7	1900.7	2052.5	2410.7	70.67	116.46
Sudan RZ	4328.3	3554.3	3736.7(a)	4427.6	-17.88	2.29
in0NRZ	1524.3	2110.1	2417.1	3119.6	38.43	104.66
Sudan	5852.6	5664.1	6186.5	7547.2	-3.22	28.95

Source: Calculated from Table 7.3 above; (a) not including Bahr El-Ghazal.

remained the most important factor behind the gain of the former and the loss of the latter.

### 6.3.2 Post-independence era: Development concentration and environmental scarcity

Unlike in previous eras, the demographic picture in the post-independence era shows a steady increase of population (Table 6.5), maintaining the increase of the last decade and a half of British rule. The rate of growth of population remained high, reaching 3.1 per cent by the mid-1970s (see Table 7.3 in the following chapter). Despite the fact that the country lost about 3 million people to famine and civil war in recent decades, the growth rate of population increased to 3.5 per cent (Suliman 2000:427-8). In some regions, the population density rose due to high fertility rates and low mortality. From 2005 until 2030 the population in the Sudan is projected to increase annually by about a million people (Table 6.5). With the new realities set by displacement, the largest portion of this increase is likely to be in the downstream RZ, while in some regions the continuing population movements remain the main factor contributing to changes in population density.

Population distribution shows significant changes in the post-independence era. The pattern of population movement that prevailed between the 1910s and the 1950s under British rule gained momentum after the Sudan acquired its independence in 1956, with remote regions continuing to lose residents to the regions of the central RZ (Table 6.6). After independence, the migration of Sudanese nationals to the centre of the country was attributed, among others, to the relative opening up of the national space – the entitlement of Sudanese to access different regions in their country, including the downstream RZ – after the end of a regime that restricted population movement. At least theoretically, the end of the British rule meant that the ‘laws restricting movement inside the country were abolished and areas previously declared “closed” were opened’ (Ahmed and El-Battahani 1995:198). Although the British lifted movement restrictions in the late 1940s such as in the Nuba Mountains (Al-Karsani 2000:31), the pace of national mi-

Table 6.5: Population increases in the Sudan (1956-2000) and projected population (2002-30) (000)

Past and current population						Projection			
Year	Population	Year	Population	Year	Population	Year	Population	Year	Population
1956	10404	1967	13118	1978	17376	1989	24492	2005	37708
1957	10605	1968	13428	1979	18000	1990	25203	2010	42669
1958	10814	1969	13752	1980	18681	1991	25855	2015	47676
1959	11030	1970	14090	1981	19350	1992	26578	2020	52502
1960	11256	1971	14443	1982	19900	1993	27255	2025	57264
1961	11491	1972	14811	1983	20564	1994	27361	2030	61794
1962	11736	1973	14958	1984	21345	1995	26707	2050	93625
1963	11992	1974	15337	1985	21931	1996	27272		
1964	12257	1975	15726	1986	22567	1997	27737		
1965	12533	1976	16126	1987	23119	1998	28347		
1966	12820	1977	16953	1988	23777	2000	35080		

Source: Jan Lahmeyer (2003).

grants was nonetheless slow. The rate of migration from the Nuba Mountains, for instance, was only 2 per cent for the period 1951-60, while it jumped to 30 per cent for 1961-70 and 42 per cent for 1971-80 (Al-Karsani 2000:32). The civil war that erupted in the Nuba Mountains in the mid-1980s caused even more dramatic out-migration. The high rate of rural to urban migration is one consequence of the civil war in this region (Ibrahim 2002:75).

Migration is also attributed to the large-scale agricultural development projects launched after independence. These projects were accompanied by a development discourse that, through its effective propaganda, not only invited all Sudanese to engage in the production process but also, in early decades, provided labour opportunities to almost all those who migrated to the modern agricultural projects. In addition to migration to the irrigated schemes, other inter-regional forms of migration gained momentum and during this period urbanisation became rapid (Chapter 7).

Increasing interregional migration dramatically reshaped the relationship between the central RZ and NRZ, leading to perpetual increases in the central RZ, which showed higher relative increase in the decade of famines and civil wars (1983-93) compared to the one before it. If we look at the long range of over seven decades, i.e. from 1922 to 1993 (Table 6.7), we find that the fastest growing among regions in the Sudan is Khartoum with a 1,784 per cent population increase. Following Khartoum is the Eastern Region with its 1,465 per cent increase and the Central Region with 863 per cent and Darfur with 785 per cent increase. Over this longer period, Bahr El-Ghazal failed to compensate for its losses, remaining with a negative increase of 23 per cent. Upper Nile grew most slowly at 151 per cent and then Northern Region at 255 per cent and Kordofan with 313 per cent.

Due to the population movements described above the downstream RZ, especially in recent decades, increased its population persistently at the expense of the NRZ. In fact, since the second decade of the twentieth century, the fortunes of re-

Table 6.6: Sudan's population increases by region (1956-93)

Region	Population				% increase			
	1956	1973	1983	1993	1956-73	1973-83	1983-93	1956-93
Eastern	941039	1497381	2208446	3067095	59.12	47.49	38.88	225.93
Northern	873059	917823	1083499	1293276	5.13	18.05	19.36	48.13
Khartoum	504923	1095617	1802307	3512144	116.99	64.50	94.87	595.58
Central	2069646	3623238	4026689	5433124	75.07	11.14	34.93	162.51
Kordofan	1761968	2098073	3091480	3322799	19.08	47.35	7.48	88.58
Darfur	1328765	2076733	3112019	4638203	56.29	49.85	49.04	249.06
B. El-Ghazal	991022	1321754	2271083	1913264	33.37	71.82	-15.76	93.06
Upper Nile	888611	760774	1594554	1258302	-14.39	109.60	-21.09	41.60
Equatoria	903503	722297	1408012	1150222	-20.06	94.94	-18.31	27.31
All Sudan	10262536	14113590	20598091	25588429	37.53	45.95	24.23	149.34

Source: CBS (2000:22).

Table 6.7: Population of the Sudan by region for the years 1922 and 1993

Region	RZ/NRZ	1922(a)	1993	% increase	Pace
Eastern	NRZ	196000	3067095	1464.84	2
Northern	RZ	363900	1293276	255.39	7
Khartoum	RZ	186400	3512144	1784.20	1
Central	RZ	563400	5433124	864.35	3
Kordofan	NRZ	804400	3322799	313.08	6
Darfur	NRZ	523900	4638203	785.32	4
B. El-Ghazal	RZ	2500000	1913264	-23.47	9
Upper Nile	RZ	501300	1258302	151.01	8
Equatoria	RZ	213300	1150222	439.25	5
All Sudan	RZ/NRZ	5852600	25588429	337.21	

Source: calculated from Lahmeyer (2002).

regions changed. In the course of the seven decades between 1922 and 1993, the downstream RZ, bound by the Atbara to the east and the White Nile to the west, witnessed dramatic changes. The administrative regions making this zone, i.e. Khartoum and Eastern (largely NRZ), and the Central Region are the fastest growing among the nine regions of the Sudan in terms of their population. The regions with the largest population in 1922, i.e. Bahr El-Ghazal and Kordofan were, respectively, in the same timespan, the ninth and sixth fastest growing in population among Sudan's nine regions (Table 6.7).

However, the population movements between the two zones, i.e. between the downstream RZ and the NRZ, did not yield a linear increase in the former. If Table 6.8 represents these population movements in northern Sudan, it is likely that the downstream RZ between 1922 and 2000 had a fluctuating population, increasing in three intervals and decreasing in two others. In the three intervals of 1922-31 (9 years), 1956-73 (17 years), and 1983-2000 (17 years) the downstream RZ's population witnessed significant increase. The most significant increase in population in the downstream RZ (over 5 per cent) occurred between 1922 and 1931. The central RZ acquired the bulk of this population increase, where it scored about 10 per cent. The increase between 1956 and 1973 was much less. In

these 17 years the population in the downstream RZ increased by 3.7 per cent; again with the largest part absorbed by the central RZ, which increased by 7.3 per cent. As for the recent period between 1983 and 2000, the population of the downstream RZ increased by 4.2 per cent; and the central RZ increased by 5.6 per cent. For the whole period between 1922 and 2000 the population of the downstream RZ increased by 7 per cent; however, it concentrated mostly in the central RZ with its population increasing by 16 per cent.

Between 1931 and 1956 (25 years) the relative size of the population of the downstream RZ fell by 1.3 per cent; and that of the central RZ fell by 3.5 per cent. The decrease in the relative size of the population in the latter might serve as evidence that the construction of the Gezira Scheme caused large population displacement/out-migration from the central RZ. Similarly, between 1973 and 1983 (10 years) the downstream RZ's relative population size fell by 4.7 per cent and its central part was 3.7 per cent less. Compared to the earlier increases, these decreases in relative population size did not induce significant effects on population distribution. The decreases can be explained by the faster natural increase in the NRZ and the fact that one NRZ region, i.e. the Eastern Region, was also receiving a large number of migrants due to the jobs being created due to the boom in sorghum production (Chapter 8).

It is our argument that the population was concentrating inside the downstream RZ faster in last three decades of the twentieth century than in the decades before. In fact, if we look at population dynamics for longer time intervals, i.e., 1922-56, 1956-83, and 1983-2000, a different pattern becomes apparent. The population in the downstream RZ shows an increase of 3.87 per cent in the first interval (1922-56) and 4.25 per cent in the last (1983-2000), while it witnessed a slight decrease (0.97 per cent) in the second interval (between 1956 and 1983). Yet in the central RZ the population increase was steady for the three intervals. In the first it increased by 6.00 per cent, in the second by 3.64 per cent, and in the third by 5.61 per cent. Of all expansive areas in the Sudan the relatively small area of the Central Region and Khartoum Province recently received 52 per cent of all internally

Table 6.8: Population of the downstream RZ and the NRZ (northern Sudan) (1922-2000)

Year	DnRZ+N RZ	DnRZ	% DnRZ	Average annual change	Central RZ	%CRZ	Average annual change
1922(a)	2,638,000	1,113,700	42.22		749,800	28.42	
1931(a)	4,010,500	1,900,400	47.39	0.57	1,521,800	37.95	1.06
1938(a)	4,502,300	2,085,200	46.31	-0.13	1,560,700	34.66	-0.41
1948(a)	5,530,300	2,410,700	43.59	-0.27	1,794,400	32.45	0.22
1956(b)	7,479,400	3,447,628	46.09	0.31	2,574,569	34.42	0.25
1973(c)	11,308,765	5,636,578	49.84	0.22	4,718,855	41.72	0.43
1983(c)	15,328,124	6,917,525	45.12	-0.47	5,834,514	38.06	-0.37
1993(c)	21,266,641	10,238,544	48.14	0.30	8,945,268	42.06	0.40
2000(d)	26,030,908	12,850,271	49.37	0.17	11,367,876	43.67	0.23

Source: (a) Calculated from estimates compiled by Lahmeyer (2002); (b) CBS (2000:22); (c) calculated from CBS (2000:40).

displaced persons according to official estimates from June 1985 (El-Bushra and Hijazi 1991:255). Consideration of the three longer intervals also shows that the average annual change in the post-1983 period is much higher than that in previous intervals. Thus, while the annual average change in the downstream RZ for 1922-56 was 0.11 per cent, it had risen to 0.25 per cent between 1983 and 2000. In the central RZ it was also higher, when in 1922-56 the annual change was 0.18 per cent, whereas it reached 0.33 per cent between 1983 and 2000. The latter interval is relatively shorter (17 years) compared to the previous first and second interval with 34 and 27 years, respectively. However, extending that period to the present time and viewing it in connection to population projections, the annual change must be even higher. This is likely to aggravate environmental scarcity, and lead to a shortage of economic incentives and opportunities in the downstream RZ. The section below presents figures on inter-regional migration in relation to the impact of environmental scarcity in this process.

*Loss of "green water": Environmental scarcity and mass displacement (1970s-hitherto)*

Current population movements between the downstream RZ and the NRZ have been largely the outcome of environmental scarcity, which affects the magnitude and direction of migration. Movements of people reflect the degree of negligence or attention given to water provision and management (Chapter 3) to prevent social disruption and rural population displacement. In short, population movements towards the downstream RZ, reflect the lack of attention given to sharing the rains in localised watersheds. A premise followed here is that this movement caused a loss of "green water" because a significant number of people, who used to benefit from rains falling on local watersheds in the NRZ, migrated out to the downstream RZ. Many of the localised watersheds in the NRZ have low or no run-off, meaning that they contribute little or no surface water to replenish the downstream RZ. Changes in water partitioning, namely caused by land-use changes (Chapter 4) thus generated, among others, food insecurity in localised watersheds in the NRZ (Chapter 5) and consequentially overwhelmed the downstream RZ through relentless immigration/displacement.

After the early 1970s both the volume of migrants and their inter-regional spatial movement gained momentum. The 1973 census showed a significant increase in migrant volume. The population born in a state and enumerated in another reached 0.7 million in 1973. The 1983 census showed this category of population to have increased to 1.3 million persons; and it made another dramatic increase to 3.4 million persons (16 per cent of the total enumerated population) by 1993 (Dept. of Statistics 1996:137, see Davies 1991b:136). Migration gained momentum after 1973 due to the impact of drought and desertification and civil war. Besides these "push" factors, modern transportation, increased literacy enabling people to acquire jobs in urban centres, as well as the more developed and natu-

rally endowed areas in the country acted as “pull” factors facilitating migration (Dept. of Statistics 1996:133).

Inter-regional migration gained momentum, though a certain pattern prevailed with regard to the direction of movements. Certain regions received high numbers of immigrants while others received much less. Among the four categories of “urban to urban”, “urban to rural”, “rural to rural”, and “rural to urban” migration, regions also differed. As the population censuses of 1973, 1983, and 1993 show, the most attractive migrant destinations were Khartoum Province (downstream RZ), the Eastern Region (NRZ) and the Central Region (downstream RZ). These three regions maintained net migration gain after the 1950s. The other six regions incurred net losses in different degrees and intervals (Table 6.9). The Northern Region, Kordofan, and Darfur started to incur net losses in the 1950s and until 1993, according to census data of 1973, 1983, and 1993. Save the period between 1973 and 1983, Bahr El-Ghazal also incurred losses between the 1950s and the 1990s. Joining this category were Equatoria in the 1980s and Upper Nile in the 1990s.

Khartoum state, which hosts the metropolis and the capital of the country, has always been a major destination of migrant population. In 1973, the province received 191,667 migrants, equivalent to 26.6 per cent of the total number of migrants in the country (Herbert and Ibrahim 1991:220).

Until the early 1990s, Khartoum was still the major recipient of migrants from all other regions. According to the current administrative divisions, and in light of the 1993 figures, only seven states of 26 had a net internal migrant gain. Khartoum is prominent among them in terms of net migrants with 42 per cent, followed by Gedarif with 4.8 per cent and South Darfur with 2.7 per cent. The major losers were South Kordofan (with -8.9 per cent), North Kordofan (-7.3 per cent), West Darfur (-7.4) and Northern state (-5.3) (Dept. of Statistics 1996:140).

Four main determinants of inter-regional migration, according to Abdalla E.T. Hassan (1995:130), can be identified. These are economic factors; social factors

Table 6.9: Lifetime in-out and net migration (000) by region, Sudan, 1956, 1973, 1983, 1993

Region of Birth	1993(b)			1983(a)			1973(a)			1956(a)		
	In	Out	Net	In	Out	Net	In	Out	Net	In	Out	Net
Khartoum	1535	111	1423	571	60	511	230	38	192	99	41	58
Northern	107	425	-318	32	343	-311	20	157	-137	14	117	-103
Eastern	490	199	291	224	61	163	113	40	73	71	18	53
Central	639	633	7	251	226	26	208	87	121	123	52	71
Kordofan	262	882	-620	60	283	-223	51	181	-130	41	83	-24
Darfur	368	685	-317	40	228	-187	25	158	-133	22	71	-48
Upper Nile	...	104	-104	69	41	28	42	20	22	10	10	...
Equatoria	...	76	-76	21	33	-12	21	14	7	10	10	...
Bahr El-Ghazal	...	285	-285	43	36	7	10	24	-14	10	16	-6
Total	3400	3400	0	1309	1309	0	720	720	0	400	400	0

Source: (a) Abdalla El Tom Hassan (1995:129); (b) Dept of Statistics (1996: Table 1, p.139).

(including marriage); natural and human-generated factors such as drought, famine, and war; and population pressure and demographic changes.

Economic factors, defined by the concentration of economic development in the downstream RZ, on the one hand, and the hazards of drought and civil war on the other hand stand out as prominent reasons for population concentration. Actually, it is hard to separate economic incentives pulling groups to the downstream RZ from the push factors in the NRZ and upstream RZ. 'Employment is the most important factor behind migration. The traditional sending regions of Darfur and Kordofan have witnessed continuous erosion of subsistence agricultural output since 1982 due to drought and desertification. Consequently, out-migration is expected to have increased sharply since 1983' (Hassan 1995:130). The NRZ regions of Darfur and Kordofan, in connection to our discussion in Chapter 4, are classic cases of regions that underwent environmental scarcity. Al-Karsani (2000:31), referring to the specific case of the Nuba Mountains, mentions 'the deteriorating socio-economic conditions, competition over land ownership and the erosion of political stability in the region', as determinants of the migration of the Nuba, especially in the post-independence period. These determinants in their simplest but most striking manifestation rendered unemployed those Nuba who had historically maintained farming activities in their homelands. Thus, unavailability of work in areas of origin was a major reason pushing youths into the ranks of migrants. In 1980/81 and 1982/83 only 9.6 and 6.9 per cent, respectively, of those registered at the local labour bureau in Kadugli (Nuba Mountains) found a job (Al-Karsani 2000:33). The Nuba Mountains represents a stark case of ecological marginalisation causing migration.

Given the discussion in Chapters 3 and 4, it is clear that we cannot separate control of political power from benefit from economic development in the Sudan. Certainly such a combination creates opportunities in certain regions and deprives others, therefore, inducing population movements between such regions. Investments in the Sudan favoured the irrigated and urban areas in the central RZ (Chapter 3). Thus, whereas most of the migrants between Sudan's regions moved from poor rural areas to the relatively rich ones (Hassan 1995:130), the development of the modern sector around the centre of national political power, according to Harir (1993:20), 'set in motion enormous labour movements along an east-west axis', where 'people from subsistence sectors raided the modern sector seasonally for wage labour' (see also Barnett and Abdelkarim 1991:6).

While the pattern of migration to the irrigated schemes might have continued unaltered, significant to the dynamics of the post-independence period was the stronger engagement of rural communities in the market economy, either as cash-crop producers or wage labourers. This engagement set into motion the dynamics that produced larger labour migration in the first three decades following independence and environmental scarcity-induced mass displacement in the last ones.

The link between local economies and the export tax economy presented new challenges, namely finding wage labour, which for the bulk of the rural population meant engaging in labour migration. Thus, as time passed, labour migration to agricultural schemes and urban centres increased rapidly (Hassaballa and Eltigani 1995:24, see Babiker 1986:6). 'The small farmers often seek work in large schemes or in nearby towns, remitting part of their earnings to family members left behind in their home areas. This category has suffered most from inflation and from displacement by agricultural mechanisation' (Babiker 1986:6). Deepening these transformations were the economic disparities between the modern and traditional sectors generated by the expansion of large-scale agricultural schemes and the great anomalies in production systems created by this expansion as well as the environmental hazards it generated (Abu Sin 1995:13). The national governments which inherited the system after the departure of the British, maintained the same dynamics. In the 1970s, the changes taking place in rural areas were so deep that the traditional system became paralysed, unable to provide for rural needs and, therefore, increasingly tying traditional producers to the modern sector. Egeimi (1996:38-9) notes that, for the Hadendawa's local economy, migration for wage labour increased in importance and became a characteristic feature of their adaptation to the increasing food scarcity and insecurity. The Hadendawa wage labour migrants made the trek to the agricultural schemes of Tokar, Gash, and New Halfa and to towns.

Migration for wage labour is a process that ties migrant labourers tightly to its needs in so far as they remain with no option other than engaging in it and with no chance to generate surplus to release oneself from its control. 'The pattern of seasonal migration and work conditions in the receiving areas makes production possible at very low wages' (Babiker 1986:392). The question now becomes not whether to retain or leave the job, but rather whether to continue migrating for the job or move altogether and settle permanently in its location. 'The seasonal character of labour movement', according to Harir (1993:20) 'continued as long as it was possible for tribesmen to maintain their families and relations within a reasonably sustainable subsistence economy. However, this became impossible, due to a number of factors, and in particular the Sahelian drought at the beginning of the seventies' (see also Abu Sin 1995:15, Suliman 2000:129). Thus, throughout the post-independence era, "voluntary" migration to the downstream RZ was imbued after the early 1970s with a much higher "involuntary" proportion, which has characterised the period since. We are entering what Shazali (1992:124) calls the 'era of displacement'.

After the mid-1960s, "resource capture" by the state became feverish and larger groups in the process were subject to ecological marginalisation, often taking a swift course that effectively precluded adjustment. The droughts of the 1970s and 1980s led to the collapse of subsistence economies and left the population of the marginal lands the option of moving *en masse* towards the river. Although droughts affected both modern and traditional economic sectors, fail-

ure in the subsistence economies was the major cause of population displacement and, therefore, population concentration. The difference between the 1970s and the two decades following is that the latter indicate a *condition of environmental scarcity* and total collapse of subsistence economies where poverty and famine had become the norm. ‘Despite the Sudan’s enormous potential the Sudanese people have been plagued by poverty and, since the early 1980s, by persistent famine’ (Eltigani 1995:1). Though displacement of large groups could be attributed to the early 1970s, it took a dramatic course in the mid-1980s when the country faced one of its most severe famines in its post-independence history, described as ‘the worst in living memory’ (El Tom 1987:150). The famine ‘engulfed half the population’ (Barnett 1988:3) and the death toll mounted to a quarter a million people (Chapter 5). Replicated by civil war, famine assumed a wider geographical scale, where the majority of the 1.5 million who died in southern Sudan were victims of the famine that the war induced (Mohamed Salih 1999:152). Large groups of population moved from the war zones in the upstream RZ into the downstream RZ.

During the drought of 1983-85, the rural communities that had undergone ecological marginalisation were the first to starve (Hassaballa and Eltigani 1995:33). At the beginning of the environmental stress the largest numbers of internally displaced persons first moved south, some with their animals travelling along the old routes, by which they had taken them to pasture. The difference between the forms of migration in pre-1970s and the ones to follow that period, generally speaking, is thus stark. Many of those affected by drought and famine decided to leave their localities only after their subsistence economies collapsed. In fact, for quite some time, groups from drought-stricken areas moved relatively short distances to zones closer to their areas of origin. We pointed out briefly in Chapter 4 how droughts caused populations to take refuge in regions adjacent to their marginal lands. The drought which hit western Sudan in the 1970s killed a large number of acacia trees and disrupted the production of gum arabic, therefore, reducing incomes and food availability (Markakis 1998) and causing localised displacement. According to Markakis (1998:90), the southwards movement to areas less affected by drought was one of the traditional coping strategies that barred drought from turning into a famine (see Harir 1993:15-6). As pointed out in Chapter 4, these movements contributed to escalating conflicts in the host areas and operated as another cause of displacement, hence the large movement of population out of the now “congested” savannah belt into the downstream RZ.

The beginning of the 1980s marked a turning point in the magnitude of increase in migration rates (see El-Bushra and Hijazi 1991:254). During this period, hazards became an important explaining factor for migration. Thus, ‘civil war in the South and drought and desertification in the North, especially in Northern and Central parts of Kordofan and Darfur since 1983, have uprooted population and pushed them into more favourable areas, such as Khartoum and Central States’ (Dept. of Statistics 1996:149, see also Herbert and Ibrahim 1991:221). During this period, in addition to the ordinary labour migrants, we have two categories in the scene, i.e.

the war and drought IDPs and international refugees (see Dept. of Statistics 1996:149). The number of refugees in the Sudan fell significantly in recent years. By the end of 2003, only about a third of that last figure, or 347,847 refugees, remained in the Sudan (SPLAToday.com 07 November 2003). The worsening security situation in the Sudan is sending large numbers of refugees into neighbouring countries, interestingly including Egypt, which recently received 1000 refugees every month (Al-Sahafa 20 August 2004).

In fact, the 1980s marked the start of a faster and persistent pouring of population into the downstream RZ, which resulted in clear population concentration. "Resource capture" in different regions, inducing famine, played an important role in the migration. The expansion of mechanised farming in the Nuba Mountains, for instance, not only alienated farmers and pastoralists from their lands but also caused problems of food shortage and the latter accelerated migration to Greater Khartoum (Al-Karsani 2000:34). According to Al-Karsani (2000:31), the rapid efflorescence affected by the cotton market and production resulted in further changes in land tenure in the Nuba Mountains region and, therefore, made migration an important survival strategy.

Drought had such a large impact that regions that underwent such impact overran other classic cases of population-sending areas; even relatively stable regions, such as the Central Region underwent drought's devastation (see Hassan 1995:131, Davies 1991b). The reaction to the condition of scarcity in rural areas, where the state failed to deliver food even under conditions of emergency (Cheru 1989:112) in the NRZ, was the movement of population towards the central RZ as the survival niche. Kordofan rose as the major sending region. In the 1980s, migration to Khartoum, in relation to ranks of sending regions both in the RZ and NRZ, started to change – the Northern Region (RZ) gave way to Kordofan (NRZ). Of the migrants, who made up a third of the population of Khartoum Province as the 1983 census data show, 'most had come from the Northern Region (27%) and Kordofan (25%). Darfur was some way behind with 11%. However, the increasing importance of the west, especially Kordofan Region, is suggested by the 1973 census as its share then was only 22% and Northern Region provided 31%' (Davies 1991b:136). A study conducted by Norris two years after the 1983 census, presents, according to Davies (1991b:136), 'convincing evidence that Northern Region had been replaced by Kordofan, especially North Kordofan Province and the Nuba Mountains, as the dominant source of new migrants' to Khartoum (see El-Kheir 1991:162, Abdel Ati 1991:169, Hassan 1995:131).

The relatively stable Central Region was also bedevilled by drought and desertification, causing large population out-migration. Hassan (1995:131), particularly referring to Central Region as a major population-sending region, states that this is 'perhaps reflecting declines in the productivity of both traditional agriculture and irrigated schemes'. On the one hand, perhaps, this can be attributed to the changing relation between the Central and the two other recipient regions, i.e. Eastern and Khartoum. The flourishing mechanised farming and peaking of sorghum produc-

tion contrasted with the state's withdrawal from supporting cotton production in the Central Region, certainly contributed to these flows (Chapter 5). This is also an indicator of the amount of investment that Khartoum started to pull, as pointed out in Chapter 3. However, two more reasons can be added as to why the Central Region was losing to Khartoum – one demographic and one climatic. According to Davies (1991b:136), both the Gezira and White Nile (districts in the Central Region) 'have been areas of considerable population increase since the 1950s and the White Nile area, like Kordofan Region, has been seriously affected by *drought and desertification*' (italics added). The demographic pressure was translated into a diminution of cultivable land (plots decreased from 40 *feddans* to 15 *feddans* in some areas) (Shaaeldin 1987), while drought also reduced the supply of other natural resources. However, while the Central Region lost to Khartoum, groups moving from other regions, namely the major population-sending regions of Kordofan and Darfur compensated for this loss.

*Civil war, tribal conflicts, and armed banditry*

The upstream RZ – southern Sudan – remained largely isolated from the migration dynamics in the downstream RZ. Its three regions had maintained a lower migration profile compared to the six regions of northern Sudan. To the major migrant destination, i.e. Khartoum Province, southern Sudan sent only 6 per cent of the total figure both in 1973 and 1983 (Davies 1991b:136). But after 1983, large waves of immigrants/IDPs from southern Sudan to the north gained momentum.

In addition to the impacts of the droughts the resumption of the civil war caused severe famines in the upstream RZ, as mentioned earlier. Like "natural hazards" in the north, civil war first induced localised displacement. Only later did the IDPs reach out to regions far abroad from their homelands. Where access to land for producing food crops was rather impossible, the persisting violence in the south led thousands of Dinka to leave their homes and move within the south, northward into southern Kordofan or to seek refuge in neighbouring countries (Mohamed Salih 1999:117). Large groups of populations moved from the war zones in the upstream RZ largely into the arid and semi-arid RZ of northern Sudan. In one year, i.e. 1987, the worsening conditions in southern Sudan displaced 730,000 southern Sudanese to northern Sudan, namely to Greater Khartoum (Abdel Ati 1991:169). The number of people displaced by civil war peaked at about 2.5 million, whereas, according to Mohamed Salih (1999:152), more than two million were internally displaced and over 400,000 took refuge in neighbouring countries. By the year 2000, the number of IDPs from southern Sudan in Khartoum alone, according to H.M. Mohammed (2001a:21) reached 2 million.

Recently, an added factor, i.e. oil, has further fuelled the civil war in the upstream RZ and, therefore, replicated displacement. 'The government in Khartoum has forcibly evicted people from their lands to develop the oil fields' (*The Christian Science Monitor* 22 September 2003). This means the downstream RZ will receive

still more IDPs. Moreover, civil wars have now engulfed all NRZ regions in the same line as those in the upstream RZ. The recent breakout of civil war in western Sudan's region of Darfur has already caused the displacement of 1.4 million people of whom 200,000 crossed the border into neighbouring Chad (*Sudan Tribune* 16 October 2004).

Persisting tribal conflicts and armed banditry, especially in western Sudan, made population movements into the *secure* central RZ the rule of the day. El-Bushra and Hijazi (1991:255) point to a survey among a group of displaced, which showed that 49 per cent moved because of the civil war, 23 per cent because of tribal disputes, and 22 per cent because of unemployment. Another study points out that 4.3 per cent of the IDPs in Khartoum were displaced by armed banditry (Al-Mahal and Omer 1992:51). Insecurity as a cause of displacement is more apparent in connection to the civil war in the upstream RZ.

As a consequence of the above, in the 1980s and 1990s the Sudan had the highest number of IDPs in the world (Suliman 2000:393, see also Doebbler 1999). Available statistics show that in 1988 the total number of IDPs reached approximately 6.8 million. This figure constituted 29.1 per cent of the total population, an extremely high proportion by all standards. Of this number, those displaced by drought represent 11.2 per cent, while those displaced for security reasons represent 17.6 per cent (Mahran 1995:64, see also Al-Mahal and Omer 1992:16). The displacement trend continued in the 1990s, whereby the number of those affected by war and war-induced famine in 1994/95 was some 4.5 million, i.e. about 15 per cent of the total population of the Sudan (Mohamed Salih 1999:65). The upstream RZ, undergoing population disturbance, in the main for security reasons, thus joined the arid NRZ regions in pouring large numbers of IDPs into the central RZ.

Regions' aggregate density reflects these redistribution trends. In the nine regions of the Sudan (except for the southern regions after 1983), population density is increasing, though unevenly (Table 6.12). 'If the country is divided longitudinally into two halves (East and West of longitude 31 E), it will be noticed that more than 50 percent of the population live in 24 percent of the country area lying east of the dividing Longitude' (Dept. of Statistics 1996:151). The reason for the high density in this part of the country is obvious as living conditions there are more favourable (Dept. of Statistics 1996:151).

Taking the whole RZ together, population began concentrating more in the downstream RZ than in the upstream RZ; and in the downstream RZ concentration was higher in the central RZ. This is manifest in that while the whole of northern Sudan's population increased 10-fold between 1922 and 2000, that of the downstream RZ increased 12-fold and that of the central RZ increased 16-fold. Yet, we must point out that even the central RZ did not receive population evenly in all of its parts. Thus, while between 1922 and 2003 (Table 6.3 and Table 6.13) the Central Region's population increased 13-fold, that of Khartoum Province increased 29-fold. In fact, as Davies and Abu Sin (1991:1) note, between 1904 and 1990 the total population of the Sudan increased 12-fold and that

of Khartoum Province increased 50-fold. The speed of growth is such that Khartoum's population *triples* within 15 years, while that of the whole country only *doubles* in 28 years (El-Bushra and Hijazi 1991:254), with a striking leap made in the last seven years. According to Davies (1991b:133), the population of Khartoum Province increased from 1.8 million in 1983 to 3.6 million 1990 (see also El-Nur 1991:145, El-Kheir 1991:158), i.e. doubled within only seven years.

Characteristic of the last two decades is that IDPs largely settled in urban areas, whereas they previously targeted agricultural schemes. This urbanisation, which started in the first decade of the twentieth century, represents the third dramatic change in the Nile Valley in the Sudan, without a doubt reversing the millennial pattern of population movement and vehemently stirring the political arena (Chapter 4). Movements towards the "open frontier", which had accommodated groups trekking from the arid regions, came to a halt because of environmental scarcity. However, most importantly, it came to an end because of a structural reason, accelerated by environmental scarcity, namely the end of nomadism, whose proponents had been the torch bearers advancing southward for the last 13 centuries.

One important observation, to which we shall return in Chapter 8, is that even though population is concentrating in the downstream RZ, so far, it is the more arid part of it (the arid RZ) that is apparently receiving relatively higher numbers. In the central RZ, the capital region (Khartoum Province) witnessed the most dramatic increases in the country (Table 6.10). By 1993 due to influx of large numbers of IDPs, caused by civil war and other "push factors", the number of people enumerated in Khartoum state who were born elsewhere reached 1.4 million or 42 per cent of the total number migrants in the country (Dept. of Statistics 1996:133, see also El-Bushra and Hijazi 1991:255). According to Davies (1991b:135), 'the main source area was western Sudan, especially Kordofan Region.' While the largest proportions of migrants to Khartoum came from northern, central, western, and southern Sudan, the rate of out-migration from the latter two increased in recent years due to desertification and the ongoing civil war (Hassan 1995:131).

The previous section pointed out that in the central RZ the rate of annual population concentration was naturally higher than in the wider downstream RZ. We

Table 6.10: Growth of population in the capital region

Year	Population (000)	Average population increase p.a. (%)	Capital region's share of total population (%)
1940	*181		
1956	505		5
1973	1096	7	7
1983	1802	6	9
1990	3613	17	15

Source: Al-Assam and Khogali (1991:207).

Table 6.11: Sudan's regions by population size and rank (1956-2003)

Region	R	2003(a)	%	1993(b)	%	R	1983(b)	%	R	1973(b)	%	R	1956(c)	%
Eastern	4	3937564	11.7	3067095	12	5	2,208,446	10.7	4	1,497,381	10.6	5	941,039	9.2
Northern	7	1568215	4.7	1293276	5.1	9	1,083,499	5.3	7	917,823	6.5	8	873,059	8.5
Khartoum	3	5351523	15.9	3512144	13.7	6	1,802,307	8.8	6	1,095,617	7.8	9	504,923	4.9
Central	1	7250752	21.5	5433124	21.2	1	4,026,689	19.6	1	3,623,238	25.6	1	2,069,646	20.2
Kordofan	5	3895165	11.6	3322799	13	3	3,091,480	15	2	2,098,073	14.9	2	1,761,968	17.2
Darfur	2	6360763	18.9	4638203	18.1	2	3,112,019	15.1	3	2,076,733	14.7	3	1,328,765	12.9
B. El-Ghazal	6	2491174	7.4	1913264	7.5	4	2,271,083	11	5	1,321,754	9.4	4	991,022	9.7
Upper Nile	8	1493835	4.4	1258302	4.9	7	1,594,554	7.7	8	760,774	9.4	7	888,611	8.7
Equatoria	9	1299616	3.9	1150222	4.5	8	1,408,012	6.8	9	722,297	5.1	6	903,503	8.8
All Sudan		33,648,607	100	25,588,429	100		20,588,091	100		14,113,590	100		10,262,536	100

Source: (a) calculated from CBS 2000:38; (b) CBS 2000:22; (c)

Table 6.12: Population density in the Sudan by region

Region	Area km <sup>2</sup> (a)	1955/56(a)	1973 (b)	1983 (b)	1993 (b)	2000(a)
Khartoum	22142	24	49.5	81.4	159	214.1
Blue Nile	129503	14	28.0	31.1	42	51.2
Kordofan	384466	4.6	5.5	8.0	8.6	9.7
B. Gazal	107449	4.5	12.3	21.1	18	-
Equatoria	195817	4.5	3.7	7.2	5.9	-
Upper Nile	236208	3.3	3.2	6.7	5.3	-
Darfur	416580	3	5	7.3	11.1	13.9
Kassala	330860	2.7	4.5	6.7	9.3	11.1
Northern	430888	1.9	2.1	2.5	3	3.4
Sudan	2253913	5.6	6.3	9.1	11.3	13.8

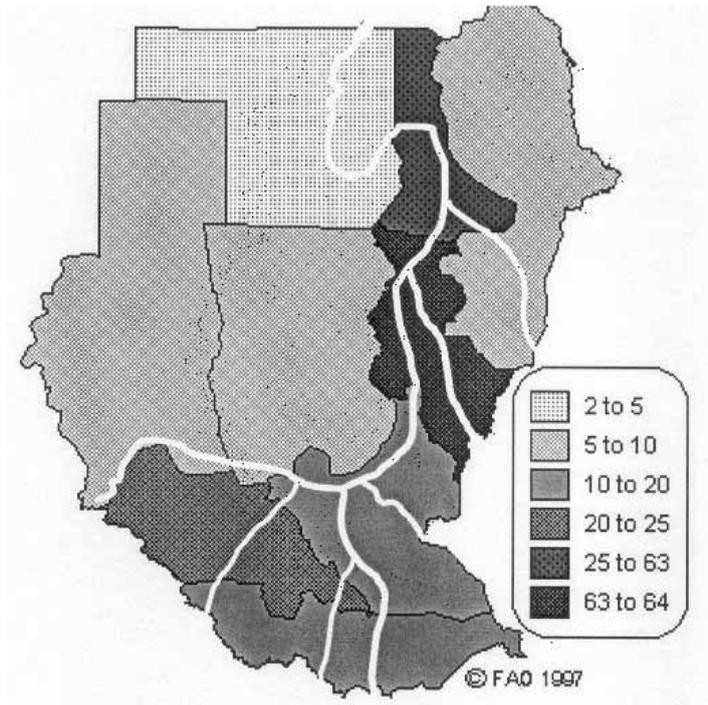
Source: (a) Calculated from CBS 2000:40, (b) calculated from Table 7.6.

noted that it was 0.18 per cent for the period 1922-56 and 0.33 per cent for the period 1983-2000. In light of the above discussion it is certainly Khartoum Province that acquired the highest annual rate of population concentration. In Khartoum Province we note that not only did numbers of population expand dramatically, but the proportion of the population living in this province also increased, reaching 15 per cent of the country's total inhabitants (Al-Assam and Khogali 1991:206). Its share 50 years back was only 5 per cent (Table 6.10). As Figure 6.1 shows, the five states of the central RZ, i.e. Khartoum State and the states of the former Central Region (Blue Nile, Gezira, Sennar and White Nile) have the highest population density, followed by the River Nile State (one state in the Northern Region). Medium density is found in the upstream RZ with Bahr El-Ghazal higher than the other two regions. The least dense are the Northern State and the nine states (i.e. 3 regions) of the NRZ (see Figure 6.1, with the Nile system added by the author). The high population density resulting from this concentration is attributed mainly 'to areas being uninhabitable or becoming depopulated with the shrinking nomadic population in the drought-prone north, and the harsh desert conditions from 12°N to 16°N' (HCENR 2003:7).

Should the causes of migration/displacement be maintained, population concentration in the central RZ in the future will continue at an even faster speed. This tendency can clearly be seen in Figure 6.2. The population of the central RZ (Khartoum and Central Region) is increasing rapidly. With the exception of Darfur, the other three regions (i.e. Kordofan, Eastern and Northern) in northern Sudan are witnessing slow population growth, which is likely to stagnate in the coming few decades. Population of the three regions of southern Sudan is decreasing in actual numbers (Table 6.6). Given the persisting civil war, this reduction has been maintained, with 4.5 million people affected, as noted above.

These dynamics have changed the old population contours in several respects; however, primarily generating loss to upstream RZ and the NRZ in terms of population to the gain of the downstream RZ.

Figure 6.1: Population density of Sudan (inhabitants/ $km^2$ )

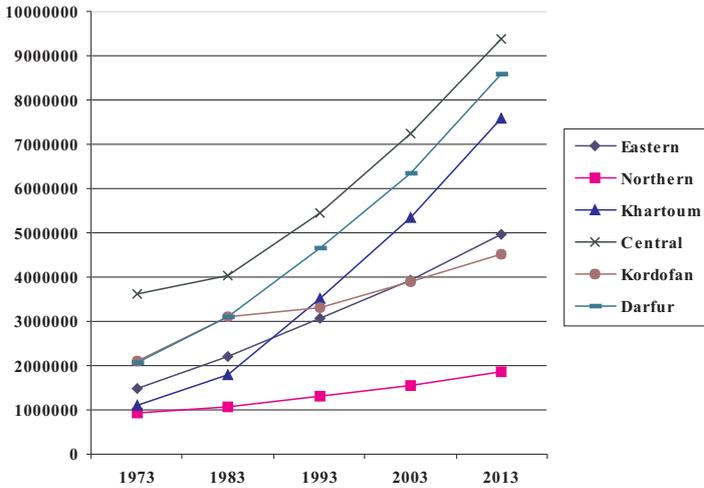


Source: FAO (1997b); the river system (in white) is added to the map by the author.

Table 6.11 provides some general facts. Assuming a relatively stable rate of growth in all regions we can say the regions most affected by drought, Eastern, Kordofan and Darfur, i.e. the NRZ, generally speaking show a diminishing rate of population growth. Further, the first two lost their ranking position on a national level. In fact, Kordofan, compared to other regions, shows a steady decrease in its relative population share.

In 1922, Kordofan was the second most populated region in the whole country with a population of 804,400 – the most populated region in northern Sudan. In 1948, Kordofan with 1.5 million population ranked first among all regions of the Sudan (Table 6.3). It then declined to rank 2, which it maintained until 1973. By 1983, Kordofan had moved to rank 3, showing a marginal increase in its relative population size and to rank 4 in 1993 with a significant decrease in its ought-to-be population size. By 2003, this region was expected to move, with a population of 3.89 million, to rank 5, leaving rank 4 to the Eastern Region, which by then will have 3.94 million people (calculated from Table 6.13). Kordofan will maintain rank 5, according to projections, until 2013. Compared with Darfur, with similar characteristics, Kordofan should have more population than Darfur.

Figure 6.2: Population projection by state (northern Sudan) (1993-2018)



Source: CBS (2000), figures for 1973, 83, 93 provided in Table 2, figures of 2003 and 2013 calculated from Table 18.

Darfur gained in population and moved from rank 3 in 1973 to rank 2 in 1983 and 1993, seemingly because of the drastic decrease in the population of Kordofan. Darfur's population is probably increasing so rapidly partly because of the remaining opportunity niches in its central and southern parts and partly because of its being geographically distant from the population-pull regions. Darfur's population increase is probably attributable to its relatively late population transition. Moreover, emigration from neighbouring Chad and Central Africa Republic and West Africa could have contributed to this increase. Al Bander (2000:25-6) points to dynamic migration from West Africa towards what he calls the "Middle Nile Valley". The Eastern Region showed a considerable increase, moving from rank 5 in 1956 to rank 4 in 1973; however, it returned to its former position (rank 5) in 1983, showing a marginal increase in its share of the total national population. With a relatively smaller population this increase is probably attributable to mass migration to and settlement in the mechanised farming schemes and the single seaport of Port Sudan.

The upstream RZ witnessed more dramatic changes in the relative size of its population. Bahr El-Ghazal, the most populated region in the whole country in 1922, moved from rank 1 in that year to rank 3 in 1931, to rank 4 in 1956, and rank 6 in 1993. However, this was not a steady decrease, as the region occupied rank 5 in 1973 and elevated to rank 4 in 1983.

The upstream RZ showed a considerable decrease in its relative population size between 1956 and 1973 mainly because of civil war. The three regions of this

zone, following this period, showed a significant increase between 1973 and 1983, then decreased in population as the 1993 census indicates. Both cases of falling population can be attributed to the instability resulting from the civil war, while the increase between 1973 and 1983 is attributable to the reversal of this condition following the signing of Addis Ababa Accord in 1972. A peace deal ending the on-going civil war certainly meant that the upstream RZ regained its lost population.

Khartoum seems to be the region that absorbed most of the populations on the move. Khartoum moved from rank 9 in 1956 to rank 6 in 1973, where it remained in 1983. It then showed another leap, moving to rank 3 in 1993. Given the dynamics pictured in 1993, Khartoum should maintain rank 3 until 2013 and probably beyond. The Central Region moved from rank 3 to rank 1 and remained there after the early 1930s, save the short period when Kordofan ranked 1. The Central Region should maintain this rank well into the twenty-first century.

The northern region while gaining more population between 1956 and 1973, therefore moved from rank 8 to rank 7, started to lose population, and therefore ranked last among the nine regions in 1983. Interestingly, this region witnessed a slight increase in population after 1983, moving to rank 6 by 1993. This can certainly be attributed to the population loss in the three southern regions (ranking higher than the Northern Region in 1983) to Khartoum and Central Region as a consequence of the second outbreak of the civil war. The Northern Region is likely to make more gains in terms of population due to the large infrastructure recently built (Chapter 8), where it is likely to exchange ranking with Kordofan and even take rank 4 very soon.

Khartoum province throughout the four census periods maintained the highest population density, reaching 169 persons per km<sup>2</sup>. The central states (comprising the former Central Region) also have relatively high densities, at 50-100 persons per km<sup>2</sup> in Gezira, Managil, and El Rahad. Along the Blue and White Niles population density is 20-50 persons per km<sup>2</sup> (Dept. of Statistics 1996:151). Density in the northern states (Northern Region) is low due to the stretches of uninhabited desert. As a corollary, along the banks of the Nile population density is high reaching 121 persons per km<sup>2</sup> in the central parts of the northern state due to more extensive irrigated land. In less favourable lands along the riverbanks density drops to 21 persons per km<sup>2</sup>. In the largest part of the province where there are extensive stretches of desert only 2.9 per cent of the province's population lives along the dry *wadis*, making their density in some parts insignificant (Dept. of Statistics 1996:152).

#### *Prospects for population concentration*

Using data on smaller administrative units (states) provided by the 1993 census, the pattern of population concentration becomes more apparent. The three states of Khartoum, Gezira, and South Darfur stand as the densest (Dept. of Statistics

Table 6.1.3: Population projection for northern Sudan states, % increase (1993-2018)

	1993	1998	2003	2008	2013	2018	1993/2018	2008/2018
Northern	511693	562204	613753	664178	713153	761502	48.82	14.65
Nahr-El-Nil	781533	865731	954462	1045009	1136361	1228118	57.14	17.52
Red Sea	684271	713212	732110	743292	749945	752624	9.99	1.26
Kassala	1234562	1397504	1584438	1795997	2025924	2264207	83.40	26.07
Gedarf	1148262	1369715	1621016	1901624	2204388	2518248	119.31	32.43
Khartoum	3512145	4372340	5351523	6429657	7577087	8770291	149.71	36.40
Gezira	2715606	3177413	3691636	4244336	4821534	5414970	99.40	27.58
Sinnar	977650	1113966	1267960	1438645	1621999	1811293	85.27	25.90
White Nile	1227024	1401895	1595449	1804769	2025891	2252785	83.60	24.82
Blue Nile	512845	598610	695707	804884	924353	1049447	104.63	30.38
N. Kordofan	1327066	1437553	1553712	1676664	1808616	1947966	46.79	16.18
W. Kordofan	992173	1086725	1183356	1284972	1392622	1502282	51.41	16.91
S. Kordofan	1003560	1080748	1158097	1240600	1329757	1420277	41.52	14.48
N. Darfur	1155874	1364352	1603297	1877927	2184621	2512070	117.33	33.77
W. Darfur	1329833	1503382	1693007	1906120	2141321	2386953	79.49	25.23
S. Darfur	2152498	2574815	3064459	3634943	4271092	4947641	129.86	36.11

1996:53) and the fastest growing in terms of population between 1993 and 2018 (Table 6.13) The first two are proper RZ states, the latter has around 25 per cent of its territory (8 per cent of Greater Darfur territory) in the RZ – the larger part of Bahr Al-Arab tributary either passes inside South Darfur or has a border with western Bahr El-Ghazal state. According to projections, the fastest growing state is Khartoum State between 1993 and 2018, followed by South Darfur, Gedarif, North Darfur, and the Blue Nile (Table 6.13). Except for North Darfur, these states are either located totally or partly within the RZ.

The slowest growing states, in terms of population, are Red Sea, South Kordofan, Northern, North Kordofan and West Kordofan (Table 6.13). These states all lie in the arid and semi-arid zones. Save the insignificant portion of West Kordofan in the RZ, all are NRZ states. One of them, the Red Sea State, will have a stagnating population with just 1.3 per cent increase in the decade 2008-18 (Table 6.13). Certainly if this low growth is maintained, the Red Sea State's population will stagnate beyond 2018, meaning that any growth of its population will be an added population to other states, namely those in the downstream RZ.

Aridity and recurrent droughts do matter in reshaping population distribution when alternatives are scarce. The large region of Kordofan has a low population density. However, depending on favourability of conditions this density varies from one part of the region to another. Higher population densities are found in eastern Kordofan, while in the northern and western parts population density is less than 6 persons per km<sup>2</sup> and in South Kordofan population density shows 9 persons per km<sup>2</sup>. The railway and asphalt road dividing Kordofan into two halves – across from east to west – have a considerable effect on population distribution and density (Dept. of Statistics 1996:152). Darfur to the west has a higher population density than Kordofan.

Worth noting here is that the portions of regions of the (administrative) NRZ (Eastern, Darfur, and Kordofan) that are part of the (natural) RZ are likely to have higher rate of increase in their population than their proper non-riverain parts. Consider the 18 per cent of the Eastern Region which lies in the RZ in the current states of Gedarif and Kassala in contrast to the Red Sea state, which is completely outside of the RZ. The combined population of the two former states (using figures in Table 6.13) is set to increase by 100.70 per cent between 1993 and 2018, while that of the Red Sea will increase by 9.98 per cent for the same timespan. In other words, the states that embody the RZ (18 per cent of the Eastern Region) increase in population much faster than the NRZ of this region. Similarly, in Darfur, South Darfur State, which has the 8 per cent portion of Darfur that is part of the Nile system (RZ) increases much faster than the two states of North and West Darfur, which are certainly in the proper NRZ part of Darfur. South Darfur state increases by 129.85 per cent, while the two other states combined increase their population by 97.08 per cent for the period between 1993 and 2018. The surprising thing is that West Kordofan State with an insignificant portion of its territory (about 3 per cent) lying within the RZ is increasing faster than its

co-Kordofan states. The NRZ of Kordofan Region (i.e. North and South Kordofan states) have a combined population increase of 44.52 per cent between 1993 and 2018, while RZ Kordofan (i.e., West Kordofan state) is set to increase its population by 51.41 per cent for the same period.

Contrast this with those states that are neither totally nor partly in the RZ, i.e. Red Sea, North Kordofan, South Kordofan, North Darfur and West Darfur. A striking finding is that, in terms of population increase, the first three of these five properly NRZ states make up the bottom of the list of the 16 states in northern Sudan in terms of population growth. The last two are actually quite comparable to the other proper and partly RZ states.

## 6.4 Conclusion

This chapter traced what we referred to as a “millennial pattern” of population movement away from the Nile Valley and analysed the causes behind it. It showed that since around the third century AD and until early twentieth century, there was no momentous population movement into the downstream RZ. In fact, the reverse was true, as our study showed that the downstream RZ, clearly since mid-seventh century sent large waves of migrants, groups from other regions/continents as well as from its own indigenous population, into the NRZ and upstream RZ, which continued until early 1920s. Several factors contributed to push/encourage populations to migrate to the NRZ and upstream RZ. These included the existence of restrictive centralised political systems; the prevalence of a *perceived* “open frontier” suitable for grazing in the western and eastern plains; dispossession of communities of their lands, including by invaders and national regimes; and preserving rules of private rights to riverain lands. The chapter also explained how government regulations protected the downstream RZ from intruders, coming from the NRZ and upstream RZ and contributed to the millennial pattern of population moving towards the latter two zones.

Strong evidence suggests that since the 1910s this millennial pattern started to reverse and accordingly the banks of the Nile and its tributaries (RZ), in all six regions of northern Sudan, compared to areas away from them (NRZ), witnessed faster population increases. This means that the population is concentrating largely in the arid and semi-arid RZ where irrigation is necessary and, particularly, it is concentrating around areas where there is irrigation infrastructure (Chapter 8). It also means increased domestic water consumption (Chapter 8).

Population concentration in the downstream RZ is expected to increase even more rapidly in the coming decades with little prospect of diminishment. This has two direct implications for Nile waters. Firstly is the need for adoption of resettlement policies in rural areas as well as in urban areas with the river water being used for irrigation, primarily, to meet the food needs of the new settlers (immigrants/IDPs) (Chapter 8) besides those of the downstream RZ old-timers. This situation will create scarcity of Nile water if irrigation methods remain the same.

For in this case, the fixed amount of water (Sudan's 1959 agreement share of 18.5 billion m<sup>3</sup>), with inefficient irrigation methods, must meet the demand of larger population numbers. The "blue water" of the Nile must compensate for the loss of "green water" and underground water in the NRZ. Given that sufficient rains replenish the NRZ, and that these rains could sustain the livelihood of an increasing population should some proactive intervention take place, the out-migration of NRZ population, can be considered a lag in optimising the use of the rains falling therein. The sending zones are also rich in underground water, which could be used for sustainable small-scale irrigated farming (Chapter 11). The "blue water" of the Nile must also compensate for the "virtual water" that traditional farmers and pastoralists of the NRZ and upstream RZ used to send to the downstream RZ.

The second direct implication for Nile water is that population concentration in the downstream RZ will set in motion a rapid urbanisation which will certainly lead to an exponential rise in demand and is likely to add to the political power of the urban population, particularly the larger urban agglomerations which will then allocate the waters for their own constituencies (Chapter 8).



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## 7 Rapid Urbanisation: Current Pressures and Potential Causes of Water Scarcity

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### 7.1 Introduction

The main questions in this chapter are whether population is currently concentrating in the urban areas of the RZ and whether this is reversing the historical pattern and altering the pace of urbanisation in the NRZ. Emphasising the relationship RZ/NRZ and pointing to the political, economic, and environmental reasons that lead to urbanisation, the chapter starts by showing how towns in the Sudan flourished in certain epochs and how they lost importance in others, in relation to the two domains of the RZ and NRZ. The chapter necessarily examines the tendency of pastoralists to sedentarise (paving the way for growth of large villages and towns or ensuing group migration) due to political, economic, and environmental regimes. Along lines similar to those in Chapter 6, this chapter uses historical evidence to show that the pressures that pushed population groups away from the Nile Valley (downstream RZ), in fact, contributed to urbanisation in the NRZ and hence decreased the potential urban demand for Nile water. The chapter also uses the incidences of population concentration in urban areas to show the impact of “resource capture” and “ecological marginalisation” on rural populations. Specifically, it emphasises the change in urban population distribution pattern in recent years – movement of rural and urban populations from the NRZ and upstream RZ watersheds to urban areas in the downstream RZ.

The chapter draws comparisons between the urbanisation trends in the RZ and the NRZ and between the upstream RZ and downstream RZ. In this respect, it examines the increase in number of towns and growth of their population in each period under study. The aim of this chapter, similar to the aim of the previous one, is to elaborate on what we consider to be the cause of increasing demand for Nile water, therefore, the cause of new forms of competition/conflict over water as well as pressure on governments. Similarly, population re-distribution trends, leading to population resettlement and concentration in urban areas of the downstream RZ is meant to explain the coming age of scarcity of Nile water in the Sudan – influential urban areas necessitate adequate and timely food supplies, which can be guaranteed only through the predictability of irrigated farming.

The chapter is divided into five sections. Section 7.2 paints a general picture of “urbanisation” during the millennial era (pre-nineteenth century), basically to see the

factors affecting the growth of large human settlements. Section 7.3 elaborates on the sedentarisation and urbanisation processes during the Turkish and Mahdist eras (coinciding with the first regime of control over the Nile). Section 7.4 focuses on urbanisation and sedentarisation during the first half of the twentieth century and portrays urbanisation's steady evolution in relation to the RZ/NRZ. Section 7.5 elaborates on the impact of "resource capture" on human settlements during the post-independence era. Section 7.6 compares the trends of population concentration between the RZ and NRZ and between the upstream RZ and the downstream RZ.

## **7.2 Pre-nineteenth century forms of urbanisation: The millennial pattern**

Each epoch in the history of the Sudan had its own urban features where appearance of urban centres was influenced largely by internal dynamics and responded to specific socio-political necessities. The ancient Nubian civilisations of Kush, Nabata, and Merowe in northern Sudan gave rise to towns that served the dual function of being political as well as religious capitals. In pre-sixteenth century Sudan, apart from Dongla and Soba, which were the capitals of the northern and southern Christian kingdoms of Makarra and Alwa, respectively, it is rare to find a trace of large human settlements. However, small towns or large villages did exist in large numbers. For instance, the Alwa Kingdom had upwards of 400 churches (Chapter 6), which indicates that there were villages large enough to warrant such an institution. In the sixteenth and seventeenth centuries, a few towns that had a population of more than 10,000 might have existed. These included Sennar, which served as the royal seat and an important centre of commerce (Pollard 1984:168, see Hassan 1977), Fasher, and probably, Fashoda. These are the capitals of the three main kingdoms of the Funj in central Sudan, the Fur in the west, and the Shilluk in southern Sudan, respectively. In addition to these, Suakin town, on the coast of the Red Sea, served as port and destination for traders from the hinterlands of the Sudan and Abyssinia as well as for pilgrims from West Africa. Gerri, the seat of the Abdallab sheikhs, in the northern part of the Funj Kingdom must have developed into a town though probably with less population than Sennar, the kingdom's capital. During this period, settlements such as Halfaya and Eilafoun had also flourished in the current Khartoum capital region (Davies and Abu Sin 1991:3). During this era, in the NRZ only Suakin, El Obeid, Fasher, and probably Bara existed as towns.

Around the beginning of the nineteenth century, relatively large settlements started to flourish besides the main royal capitals. As noted in Chapter 3, this era saw a tendency among nomadic communities to settle in agricultural communities. During this era, Shendi, the capital of the Ja'aliyeen kingdom, had a population of 6,000 (Warburg 1992:2). Berber and similar trading towns started to flourish, while other towns gained importance as religious centres, such as Wad Medani and Kassala. During this period, it is possible to argue that political factors played

the major role in defining the general setting and, therefore, the emergence of towns. Thus, with a few exceptions, all pre-nineteenth century towns originated in the RZ.

Large numbers of sizable villages featured in the NRZ landscape in the rainy cultivable zone. By the time the Turks conquered it in the 1840s, the Taka region in eastern Sudan, for instance, had between 15 to 20 villages, each home to between 6,000 and 7,000 inhabitants (Nasr 1979:34).

### 7.3 Sedentarisation and urbanisation in the nineteenth century

Urbanisation during the nineteenth century, that is, under the Turkish and Mahdist rules shares some common characteristics which makes it logical to address them together.

#### 7.3.1 Sedentarisation and urbanisation during Turkish rule

This section elaborates on what may be considered as one factor contributing to relieving the Nile Valley from pressure of water scarcity in the nineteenth century, probably up to the early twentieth century. Our argument here is that political and religious factors largely reshaped the process of urbanisation in the Turkish Sudan. The coming of the Turks signalled some significant changes, largely to do with their domain of influence compared to that of Sudanese kingdoms or “sub-state” units. Some garrisons and administrative posts, during the Turkish era, laid the first embryos of modern towns in the country; however these would take time to develop. As part of the depopulation strategy, which the Turks seemingly preferred and adopted in northern Sudan, the Turks actually halted and distorted the process of urbanisation in the downstream RZ. During this period, the old capitals of Sudanese kingdoms were either destroyed or lost in importance. In the second year of the invasion, Shendi, Metemma, Damer, and all the settlements along the Nile from Berber to Sennar were destroyed. As noted in Chapter 6, this was in revenge for the assassination of Ismail Pasha, the commander of the invading troops. Sennar, the capital of the Funj Kingdom, which surrendered to Ismail Pasha without resistance two years before, thus was destroyed in the *Defterdar* Avenge Campaigns. Similarly, Berber, which served as the transitional headquarters of the Turks in the first year of the invasion, lost the momentum of growth that it previously witnessed. Medani, which was to become the second capital of the new rulers, started to gain in importance until finally the Turks abandoned it and moved to Khartoum, a previous garrison, and made it the capital in 1834 (Davies and Abu Sin 1991:4).

The selection of Khartoum as the capital of Sudan had to do largely with the cruelty of the new rulers which generated obstinate resistance by communities, which often chased the invaders out of their neighbourhood. Khartoum was a “fortress” – it is “fortified” by the two Niles from the east, north, and west and

hangs remotely in the semi-desert, at a distance that would be exhaustive to reach for any attackers from the densely populated regions. That is why probably it remained, for quite some time, the only urban area in the downstream RZ.

While most of the downstream RZ turned into a wilderness due to depopulation caused by the Turks' cruelties, a form of "urbanisation" evolved in regions to which large numbers of population had fled coupled with the most prominent economic activities during this era, as manifest in slave and crop trades. Thus, during the Turkish era, towns flourished as marketplaces for slaves, ivory, and crops. One such marketplace was Kaka, a typical example of how the slave industry gave rise to boom towns (see Ibrahim and Ogot 1990:364).

Political and administrative arrangements of linking garrisons and building alliances with the colonial administration also gave rise to townships in some pockets, such as in North Kordofan by encouraging and facilitating a process of sedentarisation in association with cultivation and the lucrative crop of gum arabic. Towns in Kordofan started to emerge due to sedentarisation as early as the first decades of the nineteenth century, a process in which the NRZ "urbanised" faster than the RZ. For instance, the Hamar tribe in West Kordofan started to settle in what came to be known as Dar Hamar during the time of the Turkish invasion, and the latter seems to have accelerated this process. This could be attributed to two main factors. First the rise of the Turks provided a political opportunity. The Hamar, though autonomous before the coming of the Turks, were actually under the *de facto* rule of the Fur Sultanate to which they paid annual tribute. The Turks gave them a chance to change hands and ally themselves with the newcomers against their former superiors, the Fur sultans, who had imposed burdensome taxes (for details see Babiker 1986). Being no longer their subject and, moreover, being in alliance with a threatening regime (i.e., the Turkish regime) the Fur sultans probably blocked the Hamar's traditional migration routes into the sultanate's domains. Hence, the Hamar sought settlement. The second factor was an economic one, related to the universal change in modes of production brought about by the colonial regime, but most significantly in association with an important crop – gum arabic.

More details on the pattern of Hamar tribe sedentarisation are illustrative as they show how early urbanisation benefited from "green water" and established a mode of economic activity that would produce a new economic core in the NRZ. It is noteworthy that the Hamar locality is particularly water-scarce; yet it is a place in which communities would develop a form of "water management" by generating "social resource abundance". The characteristically nomadic tribe of the Hamar started to settle in villages side by side with the settled cultivators both *Aghrab* (strangers) and slaves (Babiker 1986:383). Their new opportunity niche provided other resources than merely pasture for camels. The *acacia senegal* trees, covering large tracts of Dar Hamar, produced gum arabic, the commodity that would be the top export of Turkish Sudan.

The sedentarisation/"urbanisation" pattern in Kordofan of the nineteenth century is attributed largely to the production of gum arabic and the long-distance trade associated with it. The sustenance of sedentarisation was thus closely associated with the *acacia senegal* tree, it being not only the source of the lucrative gum and, therefore, of cash income, but also because of its ecologically stabilising qualities (Chapter 4). These qualities and the economic values attached to the acacia tree historically probably sustained livelihoods and the ecosystem of these areas. This development reached its natural conclusion in the appearance of towns long before the British rule. Associated with this period were the western NRZ plains being brought into the confines of the Nile axis and long-distance migrants now having as their destination the vicinity of the Nile Valley, with Kordofan being the terminal. 'The proliferation of trade in gum arabic and melon seed attracted the *jellaba* from the Nile to the East and West Africans such as Mima and Borgu' (Babiker 1986:385, underline original). Relative stability prevailed as the Hamar, belonging to the zone which involved the stock who were now politically "immune" from slavery (Chapter 3). However, most importantly, towns grew where water was available. Thus, towards the end of Turkish rule, as Babiker (1986:385) argues, that townships started to grow at wells situated to the west at El Niheidat hills, at El Odaya on the old Tuweisha road, and at Abu Zabad at the head of Wadi El-Ghalla. 'The latter two had been government posts during the Turkiya and the early days of the British colonial rule' (Babiker 1986:385).

Although the Hamar immigrated to Kordofan several years before the rise of the Turks, it was the power shift which the Turks induced that resulted in population movements within Kordofan, namely from its eastern part crossing to the west in which the newly settling Hamar played an important role.

In their contacts with the Turkish government, the Hamar aristocracy noticed the remunerative properties of *Acacia* (gum arabic) trees for a people rich in slaves like the Hamar. This was translated into action through the recruitment of numerous Gawama, Bedeiriya and others from eastern Kordofan who were skilled in the tapping and marketing of gum arabic (Babiker 1986:382).

Thus, a significant effect brought about by the Hamar's contact with the Turks was the process of sedentarisation, which first included labour and then Hamar tribesmen. 'Villages of settled cultivators therefore sprang up where the Aghrabs (strangers) worked in cultivating millet and tapping gum' (Babiker 1986:382, underline original). Permanent settlements increasingly became the dominant feature in the landscape of Dar Hamar.

The transition of the Hamar to agriculture was complicated by lack of water. However, to cope with the dryness of this region, sedentary cultivators hollowed out *tebelidi* (baobab) trees to keep rain water and grew watermelons to provide water for people and their animals in the dry seasons (Babiker 1986; 1998). An important conclusion to be drawn from this is that the frontiers that had long

served as pasture niches during only a certain part of the year because of lack of water, now became fully habitable areas. This is a significant transformation in the history of the Sudan – the beginning of new pattern of conflicts between the pastoralists and farmers. This occurred in the regions which historically absorbed all waves of migrants from Nilotic Sudan.

During the nineteenth century, no appreciable population concentration was possible in the form of urbanisation, as the Turks gave no attention to manufacturing or industrialisation. Towns, which served as seats of administrators with few engaging in services, were nothing more than a curse<sup>1</sup> for the rural population – they were the places which sent cruel tax collectors and greedy peddlers. Thus, in the 1870s, with the exception of Khartoum and El Obeid, Sudan possessed no towns of any size (Moorhead 1960: 179). The evolution of these two towns provides a contrast of the levels of urbanisation in the RZ and NRZ and clearly reflects the depopulation process the downstream RZ was undergoing.

As the administrative and trade centre, Khartoum flourished and gained in importance. From a small village its population increased to nearly 13,000 in 1843 (Davies and Abu Sin 1991:4), 23 years after the Turks devastated its surroundings and a decade after it became their capital. In 1881 it had 30,000 inhabitants, most of whom were Turks and Europeans and wealthy traders (Nasr 1979:168). By 1885, the last year of Turkish rule, when the Mahdist soldiers besieged it, Khartoum had 34,000 people of whom 8,000 were soldiers (Moorhead 1960: 234, see Davies and Abu Sin 1991:4). It is likely that Khartoum had more dwellers, who probably fled the city due to the threats posed by the Mahdists. Despite being the capital, Khartoum, in fact, evolved slowly, reflecting the urbanisation pattern of the downstream RZ as a whole, which appears to have continued until the mid-twentieth century.

Historical evidence shows that it was the NRZ which witnessed rather faster urbanisation compared to the downstream RZ. The major town in the NRZ, El Obeid, had a population of 100,000 inhabitants by 1882, when the Mahdi besieged it (Moorhead 1960:209). Founded in the eighteenth century, El Obeid was older than Khartoum. In the 1780s and probably before that it was the seat of the Musabba'at rulers of Kordofan (see Kevane and Stiansen 1998:17). W.G. Browne, who visited Darfur in the 1790s, mentioned that he passed through El Obeid on his way to the White Nile (Davies and Abu Sin 1991:4). Spaulding (1998:57) mentions that immigrants from Nilotic Sudan founded El Obeid when Kordofan finally came under the Keira rule. In the latter case, it is more likely that the immigrants rehabilitated and restored the town to importance after a possible destruction caused by the Fur's final assault which annihilated the Musabba'at. In

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1. In the past, and probably until now, especially among the nomads, towns were considered sources of bad luck. For the nomads, townsmen and villagers were seen as people of no respect and the engagement with them in any deal always necessitates precaution. Probably, this historically attribute to the repression exercised by centralised authorities seated in towns.

the nineteenth century, being the largest town in the country, El Obeid provided the largest crop market in the country and was also at the junction of routes for slave trade leading to the Nile region (see Moorhead 1960). Indeed, in 1875 when Colston's exploratory expedition reached El Obeid, the city was a large marketplace attracting on daily basis between 4,000 and 5,000 people from within the city and from surrounding villages (Nasr 1979:58). El Obeid and Bara, to the north-east, were the historical gum arabic centres (Stiansen 2000:15). El Obeid also served as the capital of the region, which represented the country's – even the world's – major producer of gum arabic (Chapter 3).

If El Obeid of the nineteenth century could be taken as illustrative of the level of urbanisation, the NRZ western Sudan was more urbanised than other parts of the country, including the downstream RZ. This is likely to be the case since Kordofan was the most populated province in northern Sudan throughout most of the first half of the twentieth century (Chapter 6). Moreover, being the richest province in the Sudan – the source of the main export, i.e. gum arabic (Chapter 3) – and as a corollary it being engaged in different forms of trade,<sup>2</sup> Kordofan could be considered, perhaps more convincingly, the most urbanised region in nineteenth century Sudan. Kordofan was the core productive region which absorbed most of the labour involved in exporting goods. It had absorbed most of the urban population involved in trade and “processing” of the products of this region or those crossing it to other trade centres of the Nile Valley and elsewhere within and outside of the Sudan. In its main towns of El Obeid, Bara, En Nahud and other townships, Kordofan actually hosted the largest portion of the urban population of the Sudan. Its capital, El Obeid, was the primate city of the Turkish Sudan, as its population was three times that of Khartoum, then the second largest town.

### 7.3.2 Urbanisation during Mahdism

During the Mahdist era, urbanisation generally maintained the same pace as in the Turkish era; however, with a shift that would make the downstream RZ acquire most of the urban population. El Obeid, the first capital of the Mahdist state, gained in importance before the Mahdi moved its capital to Omdurman. The new capital became the destination for all the Mahdi's followers who made the pilgrimage to it from all parts of the Sudan. Omdurman flourished rapidly; its being the new capital after the Mahdists destroyed Khartoum in 1885 leaving 4,000 people dead (Moorhead 1960:268). ‘Rossingnoli says that even by 1886 the population was between 120,000 and 130,000... but it was little more than a camp at that time’ (Davies and Abu Sin 1991:5). A few years later Omdurman had increased its population. By the famine of 1888 it had 150,000 people (Mohamed Salih 1999). With the tomb of the Mahdi in it, the new capital became a place to

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2. El Obeid developed during the Turkish rule had also become a slave market, where between 10 to 12 thousands captives from the Nuba Mountains brought annually to its Slave Market (Suliman 2000:212)..

visit not only for Sudanese, but also for pilgrims from Samarkand and Bokhara in Central Asia and even from Mecca (Moorhead 1960:280). In 1896 the town seemed to have recovered from its huge loss of population to the 1888 famine, whereby it again had ‘a semi-permanent population of 150,000’ (Davies and Abu Sin 1991:5, Duffield 1977:291, see El-Kheir 1991:156). The town attracted followers from as far abroad as West Africa. By 1890, Mahdist Fulani had migrated eastward and joined the Sudanese Mahdists, joining Omdurman’s population (Duffield 1977:291).

With the arrival of the British and due to the loss of 11,000 of the Mahdist fighters in Karari Battle in addition to those who were evicted and followed the defeated leader, Khalifa Abdullahi, into Kordofan, or returned to other regions, the city in 1900 had only 48,000 people (Lahmeyer 2001). In 1904, according to the new government’s estimate, Omdurman had 46,000 inhabitants (Davies and Abu Sin 1991:6). Thus, similar to the Turkish era, no tangible urbanisation took place under Mahdism. In 1900, one year following the collapse of Mahdism, apparently depopulated, El Obeid with 15,000 inhabitants was the second largest town in the country after Omdurman (see Lahmeyer 2001). The town’s evacuation was not necessarily on instruction – ‘People returned to some of their ancestral lands being somewhat apprehensive about the new Condominium administration to Omdurman and its inhabitants’ (Davies and Abu Sin 1991:6).

Political-religious factors largely influenced the swift population “concentration” in the downstream RZ and similarly led to its “de-concentration”. Save the environs of Omdurman, there is no evidence of other concentration of populations in the downstream RZ. Concentration, however, did take place in the remote regions of large groups escaping the terror that the Khalifa regime inflicted, joining those who were repelled by the Turks. The process of sedentarisation, which started during the Turkish rule, was now being reinforced. Tribes along the road to Omdurman who had lost their herds to the marching troops (Babiker 1986:383, 385, Al-Karsani 1998:186) resorted to cultivation and, therefore, began to establish permanent village settlements. Thus, again the NRZ experienced faster growth of towns than the downstream RZ.

#### **7.4 Sedentarisation, villagisation, and urbanisation during British rule**

Urbanisation gained momentum with the coming of the British rule because of the economic transformations that occurred during this era. Most importantly, however, momentum was associated with the provision of services such as rural water supply, especially in the NRZ (Chapter 3). Urbanisation became more ordered by the new regime of defining territories, borders, and rights and encouraging people to use permanent building materials (El-Kheir 1991:156). As noted elsewhere in this research, British rule seemed a continuation of Turkish rule, following the collapse of Mahdism. Townships either regained their previous administrative role or they ap-

peared anew as a result of the expansion of the administration and economy. Some towns lost population. Examples were Fasher in the second half of the British era and Berber towards the end of that era (see Lahmeyer 2001). Thus, political, administrative, and economic factors determined human settlements during the earliest part of British rule.

Yet it was the socio-spatial and strategic/administrative regulations that fuelled the pace of urbanisation. With the coming of the British, the country was divided into 15 provinces (see Table 6.2). The capital towns of these provinces became the seats of the administrators and associated services, as well as the largest marketplaces in their respective localities.

However, it was the economic structural changes, including structural links and exposure to national and world markets, which made it impossible for spatial closure to persist, hence, in addition to the political/administrative importance of towns, giving impetus to urbanisation. Khartoum, as the capital of the new regime, developed rapidly. Its population increased from 14,000 in 1900<sup>3</sup> to 50,000 in the early 1930s and to 83,000 before the end of the 1940s (figures are provided in Lahmeyer 2001. By independence, Khartoum had more than 90,000 inhabitants (Table 7.6). Across the river, on the western bank of the White Nile, Omdurman too witnessed a steady increase of population. Starting at 48,000 inhabitants in 1900, Omdurman, with 130,400 inhabitants, was the first town to exceed the 100,000 threshold before the departure of the British. Khartoum North, across the Blue Nile from Khartoum, also witnessed steady increase, with its population of 27,000 in 1912 having grown to 44,000 by the late 1940s (figures in Lahmeyer 2001).

Among the new towns that owed their establishment to the British was Port Sudan. This town had a population of 5,000 in the early 1920s but increased dramatically to reach 60,000 by the end of the 1940s (figures in Lahmeyer 2001). The southern towns of Juba, Malakal, and Wau emerged during this era and by 1956 their population counted 10,000, 9,000, and 8,000, respectively. Among the towns that for the most part appeared anew were those connected to the spread of the railway lines. Dozens of these appeared after the turn of the century, from Abu Hamad in the north to Rahad in the west. '[T]he railway headquarters started to develop as an urban setting where labourers of various ethnic groups came together to take similar jobs' (Ahmed 1986:9). Among the new railway headquarters towns, Atbara and Kosti flourished fastest; the former had a population of 36,000 by the end of the 1940s and the latter counted 16,000 in the early 1940s (figures in Lahmeyer 2001).

The strategic imperatives for the British in the Sudan largely defined the size and placement of human settlements. Their population redistribution effect reinforced urbanisation in the NRZ. Early on, groups that had been evacuated from the central RZ were returned to their regions of origin, namely in the NRZ. The Baggara, who were part of the ruling alliance until the collapse of Mahdism, returned in large numbers to western Sudan and settled in large resettlements

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3. In this same year, Davies and Abu Sin (1991:6) see that the city had 8,500 inhabitants.

(Mohamed Salih 1999). Mahdist Fulani made it to eastern Sudan to Gedaref and Kassala where they settled (Duffield 1977:292). Thereafter, plans to influence settlements in the wider landscape of Sudan took two forms; resettlement of discharged government soldiers and regrouping of isolated homesteads among rural communities.

During the first two decades, the British established a series of what were known as “colonisation schemes” for discharged Sudanese soldiers, who after the nineteenth century engaged in a trend of settling and developing their own communities in different parts of the country (Sikainga 2000:28). The motives behind this policy, according to Sikainga (2000:28), ‘were to maintain a degree of control over the soldiers after their discharge and to keep them loyal as a group. About 23 settlements were established between 1900 and 1922, distributed among White Nile, Kordofan, Kassala, Funj, Upper Nile and Dar Fur Provinces; they provided homes to about 2,000 settlers.’ These settlements were known as *Radif* or *Malakiya* and were constructed in rural areas, where each settler was given a piece of land and farming implements; settlers were not supposed to desert the settlement (Sikainga 2000:28-9). It is notable that these settlements were located largely outside of the central RZ – far away from Khartoum and Gezira in the NRZ and the upstream RZ. The downstream RZ, characterised by private ownership of land, hosted none of these settlements.

The other form of influencing the landscape also took place during the earliest years of the British occupation – a process to which Mustafa Babiker (1998:210) refers as “villagisation”. Referring to the case of the Dar Hamar, he notes,

[A]part from the Hamar ruling families’ headquarters and the *aghrāb* (non-Hamar groups), village dwelling was not the basic form of settlement in precolonial Dār Hamar. The predominant mode of livelihood – transhumance – in Dār Hamar, and its associated form of exploitation of widely dispersed natural resources dictated by the prevailing semi-arid climate, conspired (in part) to render the *arit* (i.e. isolated homestead) the preferred form of dwelling (Babiker 1998:203).

Against this background of scattered homesteads, the British had a new arrangement. According to Babiker (1998:204), ‘in 1905 the government began a systematic regrouping of *arits* into villages with the institution of property rights in land intelligently articulated in the process’. Following this was the policy of tribal pacification and amalgamation, which implied the regrouping of different peoples together under the umbrella of one tribe with its supreme leader known as the *Nazir Umum* (for details see Al-Karsani 1985). This process resulted in the creation of territorial borders between tribes and the connection of large groups of population to specific villages, which served as “headquarters” of the different tribes.

In connection with the pacification policy and the establishment of the administrative system, as well as the spread of the transportation lines, economic structural changes also gave birth to towns. Important among these were the pro-

cesses of linking the traditional sector to the market economy and the related sedentarisation.

An important observation regarding the British era is that townships started to flourish particularly inside the rich savannah zone. Immigrants from West Africa who traditionally traversed this zone and whose number increased during the British rule were an important factor increasing the number of towns. This is mainly due to the immigrants' complaints about the influx of natives, such as the Arabs and the Nuba and where 'indigenous land-tenure policies compelled immigrants to settle in urban centres' (Al-Karsani 1998:187). With the passage of time and due to other factors, a large number of West Africans immigrants settled in towns in western Sudan. By 1942 they made up 31 per cent of the population of al-Nahud town and represented a high percentage of the population of many other towns in western Sudan, as the 1955/56 census reveals (Al-Karsani 1998:188). The towns in the NRZ probably operated as a buffer, absorbing large number of West Africans who otherwise would have continued eastward to the Nile banks.

The British administration supported the process of sedentarisation as part of its policy of encouraging the cultivation of cash crops (Babiker 1986:388-90). In the NRZ, this encouragement was effected through provision of rural water supply, especially in the western regions of the zone (Chapter 3). However, despite the disruption caused by the integration of local economies into the market economy during the colonial period, it seems that some of the most water-scarce areas in the Sudan witnessed a sustainable sedentarisation process. In our understanding, this may be attributed to the role of the existing effective local institutions and effective land-use rules together with increased income of local groups from gum arabic and, importantly, maintaining their dependence on millet, which served both as a nutritious food source and as a stabiliser of the local ecosystem.

Though economic development in the savannah zone gave birth to new towns therein, it also undermined the role of some older settlements. For instance, Bara, the provincial capital of Kordofan under the Keira rulers of Darfur between 1803 and 1821 (Spaulding 1998:55) and an important town during the Turkish rule (see Nasr 1979) witnessed an evident decline during the British rule, except for it being Dar Hamid's district's headquarters. The railway lines by now changed the fortune of places, and the regions they crossed were divided into strips with flourishing towns and vast territories with declining ones. On a larger scale, this became the destiny of even towns of rich peripheral regions, in contrast to the importance attributed to the newly established economic core in the central RZ.

Mostly around the mid-1950s, as we shall detail later, the towns of Darfur, Kordofan, and even the Eastern Region (the three NRZ regions) and the Northern Region (RZ), started to lose exuberance to towns in the central RZ. Waves of returnees from the NRZ (Darfur and Kordofan) and the upstream RZ, hoping for security and new livelihood opportunities in the pacified north, had also contributed to loss of this exuberance and mainly led to the increase in large settlements in the RZ. British restrictions related to the "closed districts" laws and move-

ments of some communities, covering particularly upstream RZ and NRZ had probably affected urbanisation negatively (see Al-Karsani 2000:31-2, see Ibrahim 2002:142).

### **7.5 Large-scale resource capture and population concentration in the post-independence era**

Following independence in 1956, urban areas in the Sudan increased dramatically. This was largely because new settlements gained momentum, especially in relation to the large-scale agricultural schemes and the opening up of the national space to national migrants. Unlike the Gezira Scheme, established in the 1920s, the Managil extension, for instance, which was established in 1962, induced a large number of settlements (Shaw 1987:156-7). By completion of its fourth phase there were 189 settlements. Of these settlements 94 hosted less than 1,000 persons each, 65 hosted between 1,000 and 2,000 persons, and 30 hosted more than 2,000 persons each (Shaw 1987:158). Some of these resettlement areas gradually evolved into towns. 'In the 1960s, the successful completion of railway and highway transport networks, advances made in communications, construction and distribution, the development of private sector trading companies and the expansion of public services had all contributed to the emergence of a number of growing urban centres' (Ahmed and El-Battahani 1995:201).

In the 1955/56 census the total number of settlements identified as urban areas were 68 with a total population of 903,973; equivalent to 8.3 per cent of the country's total population. According to the 1973 census, the number had increased to 111 settlements with a population of 2.61 million making up 18.5 per cent of the total population of the country. Thus, the urban population almost tripled from 1956 to 1973 though this increase differed from region to region depending on physical conditions (Dept. of Statistics 1996:154). Within the next ten years, i.e. by 1983, the urban population leapt to 4.22 million. However, this was equivalent to only 20.5 per cent of the total population; very little increase compared to the previous interval. This was mainly due to the faster increase in rural population during that period. The number of urban settlements in 1983 reached 143. The increase in urban population reflected an increasing growth rate in number of towns. Between 1956 and 1983, 43 new towns emerged, making an average annual increase of 2.78 towns. However, between 1956 and 1973 the annual increase was only 2.53 towns annually, which jumped to 3.2 towns between 1973 and 1983.

In 1993, the figure of urban population reached 6.29 million, i.e. 29.2 per cent of the total population (Dept. of Statistics 1996:154-5). The increase in its relative size reflects the large rural to urban migration in the decade 1983-93. In fact, while the total annual population growth for the period 1970-90 was 2.9 per cent, the average growth rate of the urban population for the same period was 5.3 per cent annually (UNICEF 2004). Clear evidence of the rapid increase of urban pop-

Table 7.1: Urban population of Sudan (thousands), towns with more than 2,000 inhabitants in 1955/56

Town	Population	Town	Population	Town	Population	Town	Population
Damer	5.5	Port Sudan	47.6	Malakal	9.7	Suakin	4.2
Duweim	12.3	Dilling	5.6	Nyala	12.3	Suki	7.4
Fasher	26.2	Dongola	3.4	Rahad	6.7	Talodi	2.7
Al-Jinena	11.8	Jübâ	10.7	Rufa'a	9.1	Tokar	16.8
Gedaref	17.5	Kadugli	4.7	Rumbek	2.9	Tonj	2.1
Obeid	52.4	Karima	6.0	Shambat	6.6	Omdurman	113.6
An-Nahud	16.5	Kassalâ	40.6	Shendi	11.0	Um Ruwaba	7.8
'Atbarah	36.3	Khartoum	93.1	Singa	9.4	Wad Madani	47.7
Aweel	2.4	Kh. North	39.1	Sinkat	5.2	Wau	8.0
Bara	4.9	Kodok	9.1	Sinnar	8.1	Yambio	3.9
Berber	11.0	Kosti	22.7				

Source: Adapted from Lahmeyer (2001).

ulation is that its size increased about nine times between 1956 and 1993, while the rural population just doubled its size, and the nomadic population declined (Dept. of Statistics 1996:53). Urban localities in 1993 counted 122 in northern Sudan alone (Dept. of Statistics 1996:154-5), while the number of urban areas in southern Sudan remained unknown as the insecurity situation did not allow for continuing with population enumeration in that region. Given the long-range average rate of 2.78 towns appearing every year, the total number of towns in 1993 must have reached 171 at the minimum. In this respect, the upstream RZ alone may have hosted around 48 towns.

### 7.5.1 Regional urbanisation trends

Towns in relation to the two domains of the RZ and the NRZ showed some interesting trends. For instance, in 1956, there were 42 towns in the Sudan with a population of more than 2,000 inhabitants each (Table 7.1). Kordofan had the most towns of this size, with eight; followed by the Central Region with seven such towns and the Northern and Eastern regions with six such towns each. Bahr El Ghazal and Khartoum each had four, Darfur had three and Equatoria and Upper Nile had two such towns each. But this was not a strict indicator of size of the urban population in each region. Save Khartoum Province, with its 252,400 inhabitants (calculated from Table 7.1), the most urbanised region in terms of number of population in 1956 was the Eastern Region with 131,900, followed by Central with 112,000 urban inhabitants and Kordofan with 101,300. Following these were the medium-sized urban populations in the Northern Region with 73,800 and Darfur with 50,300. The south was the least urbanised, with Upper Nile being the most urbanised of the three regions at 18,800 followed by Bahr El Ghazal with 15,400 and Equatoria with 14,600 (calculated from Table 7.1).

*Resource capture-induced urbanisation*

Towns continued to grow in various degrees, yielding different growth rates in different periods for the country at large. Since the early 1970s, the pattern of population movement painted above started to witness significant changes. The destination of migrants was no longer only the irrigated schemes; it became predominantly rural to urban migration. According to Abdalla E.T. Hassan (1995:130-1), the deterioration of productivity in the traditional agricultural sector, due to the devastation of the drought of the early 1980s, led rural migrants to leave localities and move to the urban centres in search of better and more reliable jobs. The devastation caused by droughts and civil wars has resulted in population movements both at the level of localities and across the localities to other regions in the Sudan.

At the local level, in the Nuba Mountains area, for instance, small towns increased rapidly between 1983 and 1993. The towns of the Nuba Mountains region 'witnessed a voluminous increase in their population', as Al-Karsani (2000:36) notes, where Dilling increased by 81 per cent, Abu Jbeiha by 124 per cent, and Kadugli by 78 per cent. At the regional level, we can probably speak of an effective evacuation of rural areas – 80 per cent of the rural population in the Nuba Mountains moved to towns (Al-Karsani 2000:37), making the region in terms of urbanisation second only to Khartoum Province. This was clearly the result of civil unrest – the region has undergone civil war sometimes compounded by drought since 1987.

In the 1990s dominant among the four categories of population movements was the urban to urban migration, followed by rural to urban, rural to rural, and urban to rural, as the overall national pattern (Dept. of Statistics 1996). The majority of migrants in this period moved into large urban areas. Thus we can say the early forms of migration (predominated by rural to rural until the mid-1970s) resulted in concentrating populations in certain regions (i.e. in larger territories of irrigated and mechanised schemes and other rural areas with favourable conditions). Migration from the mid-1970s hitherto is one of concentrating population in urban areas, though this is higher in specific regions. Regions have differed, however, with regard to the national pattern of the four types of in-migration. In fact, of 16 states in northern Sudan, only 4 states, namely River Nile, Red Sea, Khartoum, and North Kordofan, followed the national pattern, while the remaining states, especially those with agricultural schemes, attracted population mainly from rural areas of other states to their rural parts, where the agricultural schemes were implemented (Dept. of Statistics 1996:135).

The magnitude of urbanisation is apparent in that more arid states send more out-migrants than receive immigrants from other states; and the largest portion of their out-migrants are people from rural areas who target urban areas in other states (El Zain 2006d). A typical example of this is Northern state, where out-migrants who moved from rural areas to urban parts of other states represent 51.6

per cent, compared to 38.1 per cent of its out-migrants from urban areas who settle in urban parts of other states (Dept. of Statistics 1996:135). The magnitude of urbanisation is also reflected in that of the 26 states in the country 19 were sending their urban out-migrants to urban parts of other states (Dept. of Statistics 1996:136). According to the Sudan Department of Statistics (1996:136), a general pattern could be observed where 'it can be said that areas which are more urban also tend to have more urban-urban migration followed by urban-rural migration while those states which are predominantly rural tend to have more rural-urban and rural-rural migrations'. The relative share of urban and rural among the migrants differs from one state to another, where some states receive almost all their immigrants in their urban areas, while others receive about half in their urban areas. The share of immigrants who settle in urban areas in the Red Sea state is 98.5 percent of total, while it was 94.1 percent in Khartoum, 81.4 in River Nile, 75.0 in North Kordofan, 63.2 in Sinnar, and 55 per cent in White Nile (Dept. of Statistics 1996:136). This means rural population growth in the states of River Nile, Red Sea, Khartoum, and North Kordofan will decline dramatically and within few decades these regions will be either totally or highly urbanised.

#### *Ecological marginalisation and rapid urbanisation*

Arguably, the arid and semi-arid regions that have a larger proportion of their population as nomads, namely NRZ regions of Eastern, Kordofan and Darfur (Table 7.3), are likely to witness higher rates of urbanisation. The percentage of nomads in a state's total population is dramatically declining (see CBS 2000:37). In fact, at a national level, not only in terms of relative size but also in absolute numbers the nomad population fell dramatically from 2.1 million in 1983 to 0.7 million in 1993 (CBS 2000:39). Previously, however, nomadic population had increased from 1.4 million in 1956 to 1.6 million in 1973 and to 2.1 million in 1983. In fact, it may not be surprising that a dramatic decline or almost disappearance of the nomads took place after the significant rise in 1983, as manifested in the 3.4 per cent rate of growth (Table 7.2). It is likely that the collapse of traditional farmers' subsistence economies, following the 1973 drought, initiated a "nomadisation" process, an increased number of farmers turning nomads as one possible coping strategy, which, given the increasing environmental decline, could be sustained only for a short time (we shall return to this later).

It was traditional farmers and nomads who, increasingly, faced displacement and likely made up the bulk of the urban population of large cities. Displacement in the Sudan took a serious turn in the mid-1980s when the country faced one of its most severe famines in its post-independence history. Urbanisation, resulting from displacement, in this respect, reflects the failure of coping strategies. Unlike the pre-1970s, when population migration was induced largely by "pull factors", in the period that followed migration was mainly driven by "push factors", especially food insecurity. The latter became the condition of almost the total

Table 7.2: Population and growth rate by mode of living, Sudan 1955-93

Mode of living	Population				Rate of growth			
	1955/56	1973	1983	1993	1956-73	1956-83	1973-83	1983-93(a)
Total	10 262 536	14 113 590	20 598 092	25 588 429	1.9	2.7	3.9	2.9
Urban	903 973	2 605 896	4 221 258	7 468 197	6.3	5.9	.05	5.6
Rural	8 002 712	9 877 984	14 110 959	17 415 628	1.2	2.1	3.7	3.0
Nomad	1 405 951	1 629 710	2 265 866	704 604	0.9	1.8	3.4	-10.6

Source: Dept of Statistics 1996:159; (a) CBS 2000:39.

population of the three most affected regions, where people were either displaced or became dependent on food aid (Chapter 5). 'During the drought of 1983-85, the rural societies that had been pushed into fragile ecosystems were the first to starve. As quickly as possible, they moved to the national capital seeking food and shelter and trying to draw attention to their plight' (Hassaballa and Eltigani 1995:73). The population of large urban centres more than doubled as these centres became places of major relief operations (Mohamed Salih 1999:65). As noted in Chapter 6 in the 1980s and 1990s the Sudan had the highest number of IDPs in the world. The period following 1983, shows that the large majority settled in urban areas. 'About 90 per cent of those displaced eventually settled in squatter settlements around large urban centres, particularly the "Three Towns" (Khartoum, Omdurman and Khartoum North)' (Mohamed Salih 1999:65).

Although natural increase of urban population is significant, the urbanisation process in the Sudan shows a significant increase at the expense of the size of rural settlements and nomad populations. Though figures differ from one region to another – in fact, this applies to the national level only – the relative size of rural population decreased. In 1956, 1973, 1983, and 1993 rural population relative size was 78.0, 70.0, 68.5, and 68.1 per cent, respectively. Given that the actual number of rural residents had increased during all of the above periods, the continuous decrease in the relative size of rural settled population might be attributed to a persistent rural to urban migration (Dept. of Statistics 1996:154).

Population distribution according to mode of living differs from region to region. Generally speaking, southern Sudan is more rural than northern Sudan and northern Sudan is more nomadic than southern Sudan (for details see Department of Statistics 1996:154). Rural livelihoods were thus maintained in southern Sudan, probably, due to the relative abundance of natural resources.

#### *Loss of desert economic activities and the push towards urban areas*

As with the nomad population distribution, the national pattern shows a persistent loss of this mode of living to rural and urban settlements. It has been argued that many of the presently settled groups of population of the Sudan had their origins in nomadic societies and a large number of groups in the central zone of the Sudan are nomads and semi-nomads (Dept. of Statistics 1996:155). The relative propor-

tion of nomads in the total population decreased from 13.7 per cent in 1956 to 11.5 in 1973 and to 11.0 in 1983. By 1993 it had slid to only 2.7 per cent with a negative growth rate in the decade 1983-93 (Table 7.2).

What could be referred to as a “nomadisation” process was observed, as noted above, where some regions without nomads in 1956 started to accommodate this category while others, which witnessed a decline in the share of their nomad population at a later stage, unexpectedly witnessed an increase in this very category. This could be attributed to a definitional problem (Dept. of Statistics 1996:154-5).

For the country at large, the prevailing pattern is one of both rural and nomadic modes of living losing out to increasing urbanisation. However, only one region (Khartoum) seems to comply with this pattern, while all other regions show some deviation. With the exception of Bahr El Ghazal, Equatoria, and Kordofan, all regions witnessed steady increase in the relative size of their urban population in the four census periods (Table 7.3). Kordofan witnessed unusual developments. By 1983, as Table 7.3 suggests, Kordofan was the only region in the Sudan that had a drop in the relative size of both its urban and rural population. As a corollary, the region’s nomad population increased in relative size – to more than the relative size of the region’s nomad population in 1956. If anything, a large number of the region’s rural population had become nomads, given that the decrease in the urban percentage could be attributed to inter-regional urban to urban migration. The two other regions (Bahr El Ghazal and Equatoria) showed, in 1983, a lesser relative size of their urban population than that observed in 1973; however, their rural population share increased.

Thus, we argue that the increase in the rate growth of the nomad population between 1973 and 1983 in Kordofan, for instance, was in fact a sign of the total collapse of this mode of production rather than a new wind of life. At the national level, the *coup de grace* dealt to this sector came a few years later with the intensifying civil war and tribal conflicts with the interplay of regional instability in neighbouring countries.

Table 7.3: Percentage distribution of population by mode of living and region, Sudan 1956-93

Region	1993			1983			1973			1956		
	Urban	Rural	Nomad									
Sudan	29.2	68.1	2.7	20.5	68.5	11.0	18.5	70.0	11.5	8.3	78.0	13.7
Eastern	32.8	60.6	6.6	28.9	45.8	25.3	26.0	46.3	27.7	15.9	30.8	53.3
Northern	22.9	74.2	2.9	21.3	74.1	4.7	18.5	71.3	10.1	10.1	82.2	7.7
Khartoum	83.1	16.4	0.5	74.7	20.4	4.9	71.6	23.4	5	50.4	39.1	10.6
Central	23.6	75.2	1.2	20.6	73.4	6.1	14.3	78.9	6.8	7.0	87.0	6.0
Kordofan	19.3	75.6	5.1	12.6	62.2	25.2	12.8	67.8	19.3	6.6	71.1	22.3
Darfur	14.0	81.7	4.3	10.8	74.1	15.1	9.1	71.1	19.8	4.0	76.0	20.0
B. Gazal	12.0	87.9	0.1	8.0	91.8	0.2	9.1	90.9	...	1.8	98.2	...
U. Nile	16.2	83.2	0.6	5.7	89.9	4.4	4.6	95.4	...	1.1	98.9	...
Equatoria	20.9	79.1	...	12.9	87	...	18.4	81.6	...	2.5	97.5	...

Source: CBS 2000:37.

Total collapse of the nomadic mode of production is more apparent in the Eastern Region, which saw a dramatic increase in the relative size of its rural population. This makes the Eastern Region an extreme case of non-compliance with the national pattern of population distribution according to mode of living. In fact, with the exception of Khartoum and Upper Nile, all remaining seven regions at some stage experienced an increase in their rural population instead of complying with the national average pattern. However, the Eastern Region witnessed a substantial increase in the relative size of its rural population, from 30.8 per cent in 1956 to 46.3 per cent in 1973. Then it engaged in the pattern where the rural population decreased slightly, to 45.8 per cent, to the gain of urban areas for a decade's time when it again increased substantially to 60.6 per cent in 1993. Nomadic population which represented 53.3 per cent of the region's population in 1956 dwindled to mere 6.6 per cent by 1993 (Table 7.3).

The Eastern Region is a typical example of how regimes of resource capture and ecological marginalisation induced rapid urbanisation. According to Egeimi (1996:40), 'the destruction of the Hadendawa pastoral economy and the collapse of their resilience ...not only caused a substantial short-term redistribution of population but also caused a significant long-term shift in population in the district'. His account of population in the Sinkat district shows a drastic leap in the number of urban population paralleled by a steep decline in the number of rural residents after the mid-1980s (Egeimi 1996:49). Further confirming these transformations, Egeimi (1996:40-41) states, 'sedentarization through impoverization ... has been a steady process in the rural areas':

43% of the Hadendawa people who used to move with their animals to the Gunub and Aulib, in search of pastures 15 to 20 years ago have given up such a practice during the last decade and they presently identify themselves as *Damrkinab* (settled). Loss of animals through deaths and, in some cases, sale was stated as the main reason for that change.

There are indicators that a large number of Hadendawa passed the stage of residing in villages and made their way directly to the city, namely to Port Sudan, where their numbers are incomparable to the number of those moving to other smaller towns. The number of the Hadendawa in Port Sudan increased from 1,446 persons in 1975 to 70,000 in 1989 (Egeimi 1996:39), i.e. they increased by 4,841 per cent – a very rapid increase by all standards. The migration to Port Sudan does not deny that other towns were receiving high numbers of migrants in the region. In Sinkat district (in the same region), Egeimi (1996:39) observed that the population of towns increased by 161.8 per cent due to rural-urban migration; from 11,280 in 1975 to 29,533 in 1989.

## 7.6 Uneven urbanisation in the Sudan

Urbanisation in the Sudan is nonetheless uneven – with regions as well as individual urban centres varying widely in their rates of growth. The most urbanised regions are in northern Sudan. The most populous cities are Greater Khartoum, Port Sudan, Wad Medani, Kassala, and El Obeid, which together accommodate 45 per cent of the country's total urban population and are the sites of the national urban growth (Hassan 1995:132).

According to Ahmed and El-Battahani (1995:198), the urban population in the north accounts for 34 per cent of the total population in the country, indicating that the proportion of urban population in the south is significantly lower. In the Sudan's urban scene, Khartoum has been the primate city now for several decades. In 1955, the tripartite capital was 4.7 times the size of El Obeid and in 1983 it was 6.5 the size of Port Sudan, which had by then replaced El Obeid as Sudan's second largest town (Davies and Abu Sin 1991:7, see Herbert and Ibrahim 1991:220, Bromely 1991:240, Abdel Rahman 1991:246, Hassan 1995:132). In fact, of the country's 4.4 million urban population, according to the census of 1983, Greater Khartoum had around 1.34 million, which represented 31 per cent of this total. Khartoum maintained its primacy in 1993, as its population was equivalent to the total population of the next 32 largest towns (Ahmed and El-Battahani 1995:199). The tripartite capital in 1993 had more than 10 per cent of the total population of the Sudan (Ahmed and El-Battahani 1995:199, Herbert and Ibrahim 1991:219), urban and rural alike.

Urban population was projected to reach 43 per cent by the year 2000 given no serious policies and measures to slow the rate of migration from rural to urban areas (Hassan 1995:132).

### 7.6.1 Uneven rapid population concentration between the RZ and NRZ

Characteristic to the Sudan is that it 'has a much lower urban population than African countries such as Zambia. However, if a minimum of 20,000 people is used as a benchmark to determine an urban settlement, Sudan exceeds most other countries of Africa' (Hassan 1995:131-2). Smaller towns, which are attracting more settlers, often send large numbers of migrants into larger urban centres – urban-urban migration is the dominant pattern (Dept. of Statistics 1996).

However, some regions, besides the increase in their urban population, witnessed an increase in number of towns. Table 7.4 and Table 7.5 show, in 1973, the most urban in terms of number of towns larger than 10,000 inhabitants (47 in the whole country) are the Central Region with 14 towns; Kordofan with 8; Darfur and the Eastern Region with 5 towns each; Bahr El Ghazal with 4 towns; Equatoria, Khartoum, Northern with 3 towns each; and Upper Nile with 2 towns. If we take the top 42 towns (compared to the number of towns in Table 7.1), we notice that two of the NRZ regions had lost a number of top towns (Kordofan,

Table 7.4: Population of urban centres with more than 20,000 person in 1973 (for 1973,1983, 1993)

No.	Town	Annual growth rate (%)	Population			% population increase*		
			1973	1983	1993	1973-83	1983-93	1973-93
1	Khartoum	6.8	349.1	760.7	1063.2	117.90	39.77	204.55
2	Omdurman	6.8	309.5	513.5	1361.8	65.91	165.20	340.00
3	Khartoum North	6.8	150.2	301.1	988.7	100.47	228.36	558.26
4	Wad Medani	7.1	118	243.3	465.0	106.19	91.12	294.07
5	Port Sudan	6.2	135.1	246.5	450.0	82.46	82.56	233.09
6	Wau	8.0	53.4	177.0	383.1	231.46	116.44	617.42
7	Juba	8.0	56.7	155.1	334.1	173.54	115.41	489.24
8	Nyala	8.0	63.3	152.6	329.5	141.07	115.92	420.54
9	Kassala	5.0	100.5	158.6	257.9	57.81	62.61	156.62
10	El Obeid	5.0	92.2	145.1	236.4	57.38	62.92	156.40
11	Kosti	5.1	60.6	102.3	173.2	68.81	69.31	185.81
12	Jineina	7.2	38.6	77.3	165.9	100.26	114.62	329.79
13	Gedaref	4.1	66.2	101.1	156.2	52.72	54.50	135.95
14	Malakal	6.0	37.1	76.1	136.3	105.12	79.11	267.39
15	Fasher	5.0	54.5	80.7	131.5	48.07	62.95	141.28
16	Sinnaral Madina	7.1	32.6	64.6	128.5	98.16	98.92	294.17
17	Atbara	4.0	64.3	87.6	122.4	36.24	39.73	90.36
18	An-Nahud	3.8	27.6	38.7	53.6	40.22	38.50	94.20
19	Ad Duweim	6.0	26.8	48.0	86.1	79.10	79.38	221.27
20	Halfa Al Jadida	8.1	24.3	48.9	94.6	101.23	93.46	289.30
21	Shendi	4.1	24.1	37.0	57.1	53.53	54.32	136.93
22	Al Jezira Aba	3.3	22.3	30.7	42.6	37.67	38.76	91.03

Note: Original title of this table is "Population of Urban Centres with More than 100,000 person for 1973,1983, 1993". As can be seen in the table the last five towns had less than 100,000 persons in 1993.

Source: Dept of Statistics (1996:161);\* author's computations.

from 8 towns among the top 42 now has only 6, and the Eastern Region fell from 6 to 5 towns), while the Central Region in the RZ has increased its number of top towns from 7 to 12.

Given the pattern of population concentration at the regional level, as indicated in Chapter 6, in connection with Tables 7.6 and 7.7, the growth of urban population can certainly be said to be highly uneven. Central Sudan will acquire the bulk of urban population. Also characteristic of the Sudan is uneven evolution of urbanisation between the RZ and the NRZ on the one hand and between the downstream RZ and upstream RZ on the other. With reference to the relationship RZ/NRZ, as pointed out previously, towns first started to appear in the downstream RZ. However, after the eighteenth century, probably, towns began flourishing in the NRZ on an equal basis with, if not more than, those in the downstream RZ. We noticed earlier that the NRZ region of Kordofan until mid-1950s had the highest number of towns of the 2000-inhabitants size. The relationship

Table 7.5: Population of urban centres of more than 10,000 and less than 20,000 inhabitants in 1973, 1983, 1993

No.	Town	Annual growth rate (%)	Population			% population increase		
			1973	1983	1993	1973-83	1983-93	1973-93
1	Managli	9.5	12.2	37.7	93.3	209.02	147.48	664.75
2	Damer	6.0	17.7	41.5	87.9	134.46	111.81	396.61
3	Torit	9.0	14.6	34.6	81.2	136.99	134.68	456.16
4	Mayrno	7.3	14.3	29.0	58.5	102.80	101.72	309.09
5	Kadugli	5.8	18.4	31.4	52.6	70.65	67.52	185.87
6	Hasahisa	5.1	18.4	30.1	49.5	63.59	64.45	169.02
7	Rabak	5.1	18.4	30.1	49.5	63.59	64.45	169.02
8	Roseires	6.8	13.0	25.1	48.5	93.08	93.23	273.08
9	Dilling	4.7	19.4	30.4	48.1	56.70	58.22	147.94
10	A Jbeiha	7.6	10.4	21.6	44.9	107.69	107.87	331.73
11	Bor	5.0	16.01	26.0	42.8	62.40	64.62	167.33
12	Rahad	5.5	14.4	24.5	41.9	70.14	71.02	190.97
13	Zalinge	5.7	13.8	24.0	41.7	73.91	73.75	202.17
14	Babanusa	6.2	12.0	21.9	39.9	82.50	82.19	232.50
15	Rumbek	4.2	17.7	26.5	39.6	49.72	49.43	123.73
16	Damazin	6.0	12.2	21.8	39.1	78.69	79.36	220.49
17	Sinja	2.2	19.4	24.1	30.0	24.23	24.48	54.64
18	Al Suki	3.0	16.2	21.8	39.4	34.57	80.73	143.21
19	Om Rawaba	3.5	19.7	27.9	39.4	41.62	41.22	100.00
20	Ad Deain	9.2	18.5	44.6	107.6	141.08	141.26	481.62
21	Aweil	11.4	17.8	51.9	151.3	191.57	191.52	750.00
22	Rufa'a	0.4	15.7	16.3	17.0	3.82	4.29	8.28
23	Yarol	10.6	14.7	40.2	110.1	173.47	173.88	648.98
24	Tokar	0.9	13.4	13.8	15.3	2.99	10.87	14.18
25	Yei	13.2	12.0	41.4	144	245.00	247.83	1100.00

Source: CSB/Analytical Report 1996: 160 (Table 7).

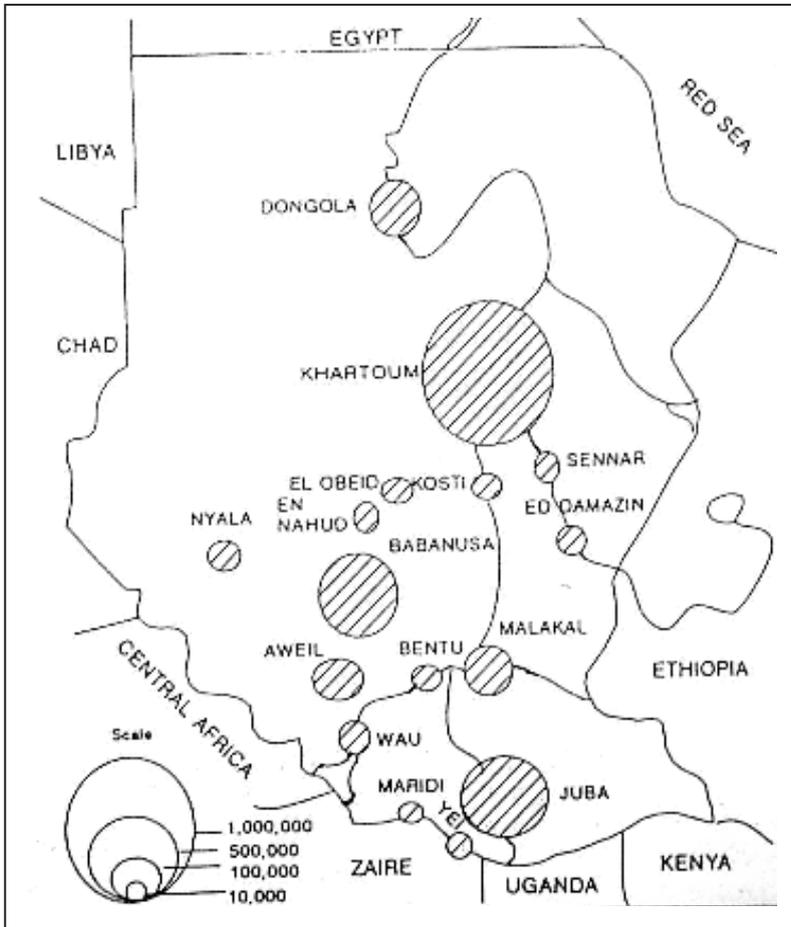
Original title: Population of urban centres with more than 100,000 persons for 1973,1983, 1993.

downstream RZ/upstream RZ had a different logic – the downstream RZ was historically the first to witness the appearance of towns.

While towns started to flourish on the plains of the rich savannah zone in the mid-nineteenth century and until the mid-twentieth century, the last three decades showed a return to the “old” pattern of growth of towns along the riverbanks. The historical influence of the Nile on growth of urban areas is more or less the cause of the current population congestion in urban areas along the banks of the river. Thus, population concentration in urban areas is similar to the process of population concentration on a regional scale (Chapter 6), where the RZ urban areas receive more migrants and displaced persons than the NRZ (Figure 7.1).

Our computations, using data provided in the *Analytical Report on the Fourth Population Census* (1996) show that the largest number of towns along the banks of the Nile and its tributaries were witnessing dramatic increases in their populations. Six of the ten largest cities in the Sudan were in the RZ (Table 7.6). The

Figure 7.1: Receiving areas for displaced persons in Sudan



Source: M.E. Abu Sin (1995).

population of these six RZ towns increased from 318,400 in 1956 to 4.60 million in 1993. Their population, together with the other four NRZ towns – the remaining of the 10 largest towns in the country – was 471,700 in 1956 and increased to 5.87 million in 1993. The relative size of the six largest RZ towns, therefore, increased from 67.58 per cent in 1956 to 78.30 in 1993. In fact, 62 per cent of the 47 towns (Tables 7.6 and Table 7.5) lie in the RZ. Most important, the RZ urban areas are growing at a faster rate than the NRZ ones (Table 7.6).

The fact that the population is now concentrating in towns along the Nile River has become established by recent studies (see for instance El Zain 2000, 2001, 2003; HCENR 2003:7, Goldsmith *et al.* 2002:199). Not least this is the region where economic development is concentrated. ‘Within the Sudan, there is a simple

Table 7.6: Population of the top 20 towns in the Sudan (RZ and NRZ) and their % increases (1956-1993)

No.	Town	Location	1956 <sup>(a)</sup>	1973 <sup>(b)</sup>	1983 <sup>(b)</sup>	1993 <sup>(b)</sup>	1956-73 <sup>(c)</sup>	1973-83 <sup>(c)</sup>	1983-93 <sup>(c)</sup>	1956-83 <sup>(c)</sup>	1973-93 <sup>(c)</sup>	1956-93 <sup>(c)</sup>
1	Khartoum	RZ	93.1	349.1	760.7	1063.2	274.97	117.90	39.77	717.08	204.55	1042.00
2	Omdurman	RZ	113.6	309.5	513.5	1361.8	172.45	65.91	165.20	352.02	340.00	1098.77
3	Khartoum North	RZ	45.7	150.2	301.1	988.7	228.67	100.47	228.36	558.86	558.26	2063.46
4	Wad Medani	RZ	47.7	118	243.3	465	147.38	106.19	91.12	410.06	294.07	874.84
5	Port Sudan	NRZ	47.6	135.1	246.5	450	183.82	82.46	82.56	417.86	233.09	845.38
6	Wau (URZ)	RZ	8	53.4	177	383.1	567.50	231.46	116.44	2112.50	617.42	4688.75
7	Juba (URZ)	RZ	10.7	56.7	155.1	334.1	429.91	173.54	115.41	1349.53	489.24	3022.43
8	Nyala	NRZ	12.3	63.3	152.6	329.5	414.63	141.07	115.92	1140.65	420.54	2578.86
9	Kassala	NRZ	40.6	100.5	158.6	257.9	147.54	57.81	62.61	290.64	156.62	535.22
10	El Obeid	NRZ	52.4	92.2	145.1	236.4	75.95	57.38	62.92	176.91	156.40	351.15
11	Kosti	RZ	22.7	60.6	102.3	173.2	166.96	68.81	69.31	350.66	185.81	663.00
12	Jineina	NRZ	11.8	38.6	77.3	165.9	227.12	100.26	114.62	555.08	329.79	1305.93
13	Gedaref	NRZ	17.5	66.2	101.1	156.2	278.29	52.72	54.50	477.71	135.95	792.57
14	Aweil (URZ)	RZ	2.4	17.8	51.9	151.3	641.67	191.57	191.52	2062.50	750.00	6204.17
15	Yei (URZ)	RZ	-	12	41.4	144	-	245.00	247.83	-	1100.00	-
16	Malakal (URZ)	RZ	9.7	37.1	76.1	136.3	282.47	105.12	79.11	684.54	267.39	1305.15
17	Fasher	NRZ	26.2	54.5	80.7	131.5	108.02	48.07	62.95	208.02	141.28	401.91
18	Sinnaral Medina	RZ	8.1	32.6	64.6	128.5	302.47	98.16	98.92	697.53	294.17	1486.42
19	Atbara	RZ	36.3	64.3	87.6	122.4	77.13	36.24	39.73	141.32	90.36	237.19
20	Yarol (URZ)	RZ	-	14.7	40.2	110.1	-	173.47	173.88	-	648.98	-
Top 20 towns <sup>(c)</sup>		RZ+NRZ	606.4	1826.4	3576.7	7289.1	201.19	95.83	103.79	489.83	299.10	1102.03
13 RZ towns <sup>(c)</sup>		RZ	398.0	1276.0	2614.8	5561.7	220.60	104.92	112.70	556.98	335.87	1297.41
7 NRZ towns <sup>(c)</sup>		NRZ	208.4	550.4	961.9	1727.4	164.11	74.76	79.58	361.56	213.84	728.89
7 DRZ towns <sup>(c)</sup>		DS-RZ	367.2	1084.3	2073.1	4302.8	195.29	91.19	107.55	464.57	296.83	1071.79
6 URZ towns <sup>(c)</sup>		US-RZ	30.8	191.7	541.7	1258.9	522.40	182.58	132.40	1658.77	556.70	3987.34

Source: Table 7.5 and 7.5 above. (a) Dept of Statistics 1983, (b) CSB (1996:160-61), (c) computed from (a) and (b).

correspondence between the size and growth rates of the cities and economic prosperity of the regions of which they are part' (Herbert and Ibrahim 1991:219).

The fact that population movements into the downstream RZ were enormous within a short range of time becomes more illustrative in relation to population concentrations on an urban scale than on a regional one. It was Davies (1984:133) who observed that within 25 years of the signing of the 1959 Nile Waters Agreement, the population of the three towns of Khartoum, Khartoum North, and Omdurman increased from a quarter of a million to one million. Davies predicted that by the end of the century the three towns would contain nearly 4 million people. However, 10 years before the end of the century the population of these three central RZ towns was already at 4 million due to the mass migration between 1983 and 1990 (Hassabala and Eltigani 1995:33). According to computations by Abdalla and Abu Sin (1991:82), between 1955 and 1983, the Capital Region increased its urban population by 428 per cent, compared to an increase of 259 per cent in urban population in northern Sudan and of 386 per cent for the whole country. Due to both natural growth and migration, the tripartite capital registered very high rates of increase. Referring to Greater Khartoum, Herbert and Ibrahim (1991:220) state that 'between 1973 and 1983 the annual rate of urban population growth was 8.5 per cent'. In 1993, the annual growth rate for Khartoum was cited at 6.8 per cent (Dept. of Statistics 1996).

However, the increase in Khartoum's population due to displacement was enormous. According to Al-Mahal and Omer (1992:21), Khartoum by 1990 had 1.6 million IDPs to add to its population, which in 1983 already exceeded 1.8 million. Three years earlier, i.e. in 1987, IDPs were estimated to count for 1.8 million, mostly driven by insecurity and drought (El-Kheir 1991:158). By 1988 the displaced comprised 85 per cent of the city's population (see Bedri 1998). Thus, the increase within just the three years following the 1985 famine was equal to the increase this city had acquired in about the three decades before the famine. According to Herbert and Ibrahim (1991:221), in the period 1955-83, 'census figures suggest that 85 per cent of greater Khartoum's population growth was driven from in-migration'. In 1990, Khartoum alone received 45.9 per cent of the total number of IDPs in the Sudan (Al-Mahal and Omer 1992:20).

By the end of the century, Khartoum had almost doubled the size of population which Davies had predicted, as noted above. Figures provided by Mohammed (2001a) show that Khartoum had around 6.9 million inhabitants in the year 2000 (see also BAA 2004). In less than a decade, Khartoum doubled its population – from 3.6 million in 1993 (Dept. of Statistics 1996) to 7.3 million in 2002 (Short 2002). This shows that the tripartite capital had increased its population by a rate higher than that predicted in 1993. Applying a rate of growth of 6.8 per annum using the population size in 1993 (Table 7.6), we arrive at the figure of 6.3 million people in Khartoum in 2002. Though this counts for two years later, it is much less than the figure provided above for Khartoum's inhabitants in 2000. However, using the same conservative rate of growth, by the end of the first de-

cade of this century, Khartoum's population would reach, at the minimum, 10.7 million. In this manner, it will host more than a quarter of the population of the Sudan. A higher rate of increase, justified by the actual high increase of Khartoum's population between 1993 and 2000, would mean that this tripartite capital will reach the threshold of 10 million inhabitants much earlier; probably by the end of 2005. As such, Khartoum must be among very few cities in the world to witness such a dramatic increase of population in a short timespan.

Medani, which in 1993 became the second largest city in the Sudan following the tripartite capital, is also in the downstream RZ. In the period between 1973 and 1993, Medani, on the western bank of the Blue Nile, increased its population by 294.07 per cent, compared to the 332.06 per cent increase for Khartoum (three towns). Sinnar Almadina, on the bank of the Blue Nile, experienced an increase similar to that of Medani at 294.17 per cent, while Kosti, another large RZ town (on the bank of the White Nile) had a 185.81 per cent increase in population. Two other relatively smaller RZ towns, in the category of the 20 largest towns in the country are New Half and Ad Duweim. These towns increased their population by 289.30 and 221.27 per cent, respectively. More striking rates of growth, however, are taking place in the upstream RZ towns of southern Sudan. The three regional capitals of southern Sudan, i.e., Wau, Juba, and Malakal increased their population by 617.42, 489.24, and 420.54 per cent, respectively. Thus, it is clear that the RZ (both central and upstream parts) are witnessing rapid urbanisation. Comparatively, save the two towns of South Darfur, Nyala and Jineina which increased their population by 420.54 and 329.79 per cent, respectively, and Port Sudan, which increased by 223 per cent, all other remaining NRZ cities in the category of top 20 towns increased by less than 157 per cent. The RZ towns in the category of top 20 towns increased their population share from 65.63 per cent in 1956 to 76.30 per cent in 1993 at the expense of the NRZ towns (Table 7.6).

As Table 7.6 suggests, the increase of population of the top 20 towns follows the pattern of the largest 10 towns in the country. Because the majority of the big cities, as well as the small towns, are on the river's banks, it is possible to argue that urban population is increasing more rapidly in the RZ than in the NRZ, a pattern different from that deemed normal some decades back. As mentioned at the start of this chapter, the "primate city" of the Turkish Sudan in the early 1880s, El Obeid, with its 100,000 inhabitants, is outside the RZ.

The example of El Obeid in the nineteenth century was recently repeated when other NRZ towns started to lose rank to the RZ towns in the last few decades. Estimates compiled by Lahmeyer (2001) and census data (Dept. of Statistics 1996) give a clear picture of the fluctuating ranks of towns in the Sudan. Between the late 1930s and the late 1940s, the large NRZ towns of El Obeid, Port Sudan, Kassala, and Fasher rose to higher ranks; though in the following decades they started again to lose population.

El Obeid, the capital of Kordofan Province, ranked 4 in the early 1920s moved to rank 5 in 1973 and to rank 10 in both 1983 and 1993. Port Sudan, the single sea-

port in the country, gained in importance, moving from rank 12 in the early 1920s to rank 3 in the early 1930s, then declining to rank 5 in 1955. In 1993, Port Sudan again declined to rank 5 after having remained in rank 4 in 1964, 1973, and 1983. Fasher, the capital of Darfur Region, which ranked 6 in the 1920s, slipped completely outside the club of the 10 largest cities in the country, ranking 14 in 1973 and 1983 and 17 in 1993. Kassala, which ranked 4 in the late 1930s, also lost its position, ranking 6 in 1973, 7 in 1983, and 9 in 1993. The only NRZ city among the 10 largest to sustain its rank in 1973 and 1993 was Nyala in the still resource-rich southern part of Darfur Region. It is noticeable that the large NRZ towns that emerged in the twentieth century (Port Sudan, Nyala, Jineina) are growing faster than their older co-NRZ towns. In fact, they overran their former regional capitals.

On the other hand, the RZ towns are increasingly large. Besides Omdurman and Khartoum, which now occupy rank 1 and 2, respectively, Khartoum North, which ranked 8 in the early 1920s and 10 in the early 1940s has maintained rank 3 since 1973. Medani, which ranked 2 in the early 1920s and 6 in 1955 and 1964, is now at rank 4. Wau, which ranked 12 in 1955, entered the club of the 10 largest cities in 1973 and rose to rank 6 in 1983, which it has maintained until now. Juba, the capital city of the Southern Region, moved from rank 10 in 1955 to rank 9 in 1973 and has sustained its elevation, ranking 8 in 1983 and 7 in 1993. The rate of growth of these cities suggests that the bulk of the urban population within the next few decades will be living in these RZ cities. This suggests that the former population map is being radically transformed, from a clear contrast between Egypt's population concentration along the Nile and the Sudan's relatively pronounced dispersed population (Waterbury 1979:9) to a pattern that makes, at least, northern Sudan look rather similar to Egypt.

The population distribution formula also shows the gain of the RZ in terms of small towns. For the whole period (1973-93), the RZ witnessed the fastest increases in population of small towns. Of the 25 small towns (Table 7.5) the top eight fastest growing ones were in the RZ.

While the total number of urban areas increased from 68 in 1956 to 111 in 1973, 14 new towns (11 in northern Sudan and 3 in southern Sudan) joined the category of urban areas with more than 10,000 inhabitants. Of the 14 towns, 10 were acquired by the RZ: six in the central RZ (Central Region) and four in the upstream RZ (Equatoria acquired two and Bahr El Ghazal and Upper Nile regions acquired one town each). The remaining four towns were acquired by the NRZ – equally divided between Kordofan and Darfur. These new towns started to increase their population faster than small towns that already existed in 1956. Seven of the small towns existing in 1956 increased their population by less than 60 per cent, two by 70 per cent, one by 134 per cent, and one by 191 per cent. All new towns that by 1973 counted more than 10,000 inhabitants increased their population by more than 60 per cent. In fact, nine of them increased their population by between 60 and 110 per cent, while the rest increased by between 135 and

245 per cent. This faster population increase of towns with more than 10,000 (in 1973) had become apparent by 1993. During this period, while 10 of the *old* small towns increased by a factor of less than 191 per cent, eight of the *new* ones exceeded a 200 per cent increase. In both categories, however, there were extraordinary increases. In fact, while one old small town (Aweil) increased enormously by 750 per cent, five of the new towns witnessed very high increases, whereby Yei grew by 1,100 per cent, Managil by 665 per cent, Yarol by 649 per cent, Deain by 482 per cent, and Torit by 456 per cent. Of these five extraordinarily fast-growing new towns, four are in the upstream RZ.

The trend described above is indicative. Small towns and larger villages emerging anew are clustering along the banks of the Nile and its tributaries, indicating that urbanisation in these areas is going to be enormous.

In the NRZ, especially in the areas recently stricken by drought and tribal and civil wars, towns and villages are deserted, stagnating or at best increasing their population only marginally. The best examples of towns with dwindling populations are the deserted Suakin and the declining Bara, mentioned at the beginning of this chapter. Deserted villages are, however, innumerable. In a relatively small section of the civil war ravaged savannah zone in Darfur Region, satellite pictures taken in the year 2004 showed that out of 576 villages 300 'have "been completely destroyed" and 76 that have been "severely damaged..." (The Washington Post 25 June 2004). The continuation of the civil war or its break in the future means that this trend will continue.

### **7.6.2 Uneven population concentration between the downstream RZ and upstream RZ**

In 1956 there were 42 towns (Table 7.1) with a population of more than 2,000, 34 in northern Sudan and 8 in southern Sudan. In relation to the Nile, 17 towns lie in the downstream RZ, 8 in the upstream RZ, and 17 in the NRZ. Dramatic changes, however, took place between the downstream RZ and the upstream RZ (southern Sudan) in the following decades, where by 1993 new towns in the latter grew much faster than those in the former. While old towns in the downstream RZ, such as Merawi, Dongola, and Halfa, dropped out of the category of towns with 10,000 inhabitants, the new towns in the upstream RZ gained momentum. Between 1956 and 1973, several villages appeared and within the next 10 years, i.e. by 1983, they started to compete effectively with existing small towns that were part of this category in the 1956 census. These villages-to-become-towns are predominately shared by the central RZ and the upstream RZ. These new towns maintained rapid growth until now.

By 1993, three of these towns in the upstream RZ (Aweil, Yarol, and Yei) entered the category of towns with population of more than 100,000 inhabitants they became members of the club of the 20 largest towns. These towns replaced

two towns in the downstream RZ (Ad Duweim and New Halfa) and one in the (downstream) NRZ (En Nahud).

Thus, during the period 1973-93 it was the upstream RZ that scored the highest rates of urban growth. The urban population growth rate of the upstream RZ towns with more than 100,000 inhabitants ranged between 6 per cent and 13.2 per cent, compared to that of the downstream RZ at between 4 per cent and 7.2 per cent (Table 7.6). Among the 20 largest towns in the country the upstream RZ now has six. In the period 1973-93, of these six towns four (Yei, Aweil, Yarol, and Wau) were the fastest-growing towns of their size in the known history of the Sudan. The remaining two towns (Juba and Malakal) ranked as sixth and tenth fastest-growing in the country. With respect to the category of the 20 largest towns, overall increase in downstream RZ urban population was 1072 per cent between 1956 and 1993, while it was 3987 per cent for the upstream RZ over the same timespan (Table 7.6).

Clearly the return of refugees after the Addis Ababa Accord in 1972 and internal displacement following the resumption of civil war in 1983 induced this unprecedented "urbanisation". In connection with displacement caused by the on-going civil war and, at one stage, its escalation, the town of Wau alone, according to Mohamed Salih (1999:152), received 107,000 displaced persons. Juba, the capital of southern Sudan, which 'was reduced by war to being a place of the old, the hungry and the abandoned, has started coming back to life in the year since the Sudanese government and rebels signed a truce, setting the stage for peace talks now under way in neighboring Kenya' (*Sudan Tribune* 20 February 2004b). It is expected that once the refugees return, after the signing of a peace deal, Juba's population will increase from 350,000 to 1 million (*Sudan Tribune* 20 February 2004b). Similarly, there are smaller towns such as Rumbek, where reportedly the recent relative stability has resulted in booming business; 'trade has revived so much that the settlement of 45,000 plans to open its first bank to cash in on the economic activity generated by the new bars, shops and hotels' (*Sudan Tribune* 18 May 2004b).

In our understanding, the displacement of the 1980s enforced the pattern of migration that had prevailed since the first decade of the last century, but with a much higher magnitude.

The above account allows us to conceive a pattern that distinguishes the regional growth of towns. While RZ towns made higher gains in population size, they, both large and small, grew faster in terms of population size the farther south. The upstream RZ is no longer rural, or 'far less urbanized' (Ahmed and El-Battahani 1995:198), as it was perceived for a long time. Unlike before the 1980s, the upstream RZ is urbanising faster than the downstream RZ. As Table 7.3 suggests, the trend is clear in the dramatic leap in relative size of urban population in the Upper Nile Region, from 5.6 per cent in 1983 to 16.2 in 1993 and in Equatoria where it increased from 12.9 to 20.9 per cent over the same timespan.

This situation has a serious implication for Nile water: increased consumption both for domestic use and for irrigation (Chapter 8).

## 7.7 Concluding remarks

This chapter traced the evolution of urbanisation in the Sudan, basically to see whether urbanisation was faster in the RZ than in the NRZ. Using historical evidence, it found that the increased settlement in the NRZ was similar to the millennial pattern of westward population movements. The nineteenth century form of urbanisation in the NRZ depended primarily on “green water” and appeared faster than that occurring in the downstream RZ. Taking place away from the banks of the Nile, this form of urbanisation should have protected this river from water scarcity caused by growth of urban populations. However, later on, this pattern changed.

There is strong evidence that the historical “open frontier” could have continued indefinitely to relieve the RZ from stress had the successive governments adopted adequate and equitable development policies. The very growth of urban areas with the momentum detailed above indicates the economic potential of the NRZ, where sound development policies, including recognition of communities’ rights to their resources, could have held most of the urban population of the Sudan in the NRZ, not in the RZ as is currently the case.

From available statistics on growth of towns together with historical evidence it is clear that urban areas in the RZ are growing extremely rapidly. This rapid increase has significant implications for Nile water. It leads to high increases in demand for Nile water for meeting domestic urban needs, which are usually proportionally higher than those of rural areas, and equally important, for meeting food needs through irrigation (Chapter 8). Rapid urbanisation under stressed economies contributes to water scarcity by impacting, through pollution, the quality of both surface and underground water. Most importantly, this rapid urbanisation affects the “balance of powers” among active political groupings, where some would take advantage of the dislocations in urban areas to manipulate ethnic and religious divisions for partisan gains. Such manipulation may affect domestic hydropolitics by tightening the polarisation between the downstream RZ and the upstream RZ.

Increased urbanisation in the downstream RZ, as part of the general process of population concentration in this zone, has led to an increase in the irrigated area (Chapter 8). It has also led to some other significant repercussions. These include a shift in state discourse, leading the state to advance *jihad* wars against large numbers of communities and generating staunch resistance on the part of these communities which seems, for the first time, to check critically and militarily the hegemony of the two-century long ruling elite in the Sudan, as noted in Chapter 4.



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## 8 Claiming a Space in the “Forbidden” Downstream Riverain Zone: Resettlement, Food Security/Insecurity, and Increasing Demand for Nile Water

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### 8.1 Introduction

This chapter portrays the state’s regulations in the twentieth century which essentially protected downstream RZ from waves of migrations from the NRZ and upstream RZ. They, therefore, kept the spectre of water scarcity at a distance. It argues that when state regulations were most strongly maintained and implemented harshly; they, to some extent were effective in preventing possibly larger population movements into the downstream RZ. However, in the 1980s these regulations started to break down, enabling immigrants and IDPs from the NRZ and upstream RZ to claim a space in downstream RZ that was previously “forbidden” to them. Associated with this, the chapter investigates to what extent the IDPs movement into the downstream RZ was a food-seeking initiative and whether it affected Nile water. It hereby asks what challenges the IDPs posed to governments and what were the responses of governments. The chapter essentially discusses whether the new settlers in the downstream RZ are permanent migrants and whether more of their kin will arrive, or whether they will eventually return to their areas of origin.

These concerns are laid out in the four main sections of this chapter. Section 8.2 examines how governments responded to the challenges posed by immigrants and IDPs from the NRZ and upstream RZ while they were in the downstream RZ. Thus, it discusses governments’ regulative measures, which aimed at blocking NRZ communities from reaching the downstream RZ. Section 8.3 shows how communal pressures enabled IDPs through their own organisations to gain the right to settle in the downstream RZ – governments started “accommodating” these communities through resettlement programmes and “catering” for their food security. Section 8.4 is concerned mainly with government food security discourse. The main part of this section discusses the drive to expand irrigated area for cultivating food crops, particularly wheat and sorghum. While making the link to urbanisation as the major source of high consumption of the above two crops, the chapter explores whether there is shift in population density from the

*millet/cassava zones* to the *wheat/sorghum zones*. The section briefly notes the possible implications for Nile water of rapid urbanisation, particularly in connection with domestic water needs and possible pollution. It also discusses the need for water for creating jobs, primarily for security reasons. The section, in this regard, discusses government resettlement policies and further expansion in irrigated area and Sudan's demand for Nile water. This part inquires whether Sudan will use its entire agreed quota of 18.5 km<sup>3</sup> of Nile water. Section 8.5 examines whether the resettlement of IDPs is a short-run policy or a strategic option – for both government and IDPs – of permanently settling in the current recipient areas. It investigates whether the IDPs are likely to return to their areas of origin, or, otherwise, likely to stay where they are now. The section ends by contextualising the projected population concentration in the *arid RZ*, in contrast to that in the *NRZ* and *upstream RZ* and explores whether this will lead to Sudan going for an amount of water above its current share.

## 8.2 Institutional reaction to IDPs: Conflict between the state and communities over the RZ domain

Two reasons have made and will make Nile water a source of conflict in the Sudan. First is that the river has become the only niche that can provide a *secure* livelihood for large groups of population coming from degraded lands that are unlikely to be rehabilitated in the near future. Second, political strife has reached its peak over issues of dividing the national pie, including Nile water, and any effective strategy towards creating political stability and doing justice to impoverished/marginalised regions will have the Nile at its core, especially for southern Sudan. As such, the state's prohibition of immigrant/IDP groups from encroaching onto the banks of the Nile and the resistance and insistence of these groups to reach this survival and opportunity niche represents a conflictual issue *par excellence*. Given that population concentration as a cause of scarcity has its immediate roots in food insecurity and lack of safety in remote regions, expansion in irrigated areas with the aim of resettling immigrants and IDPs could be considered a major step towards mitigating the conflict. How has this been addressed and what have been the institutional responses of governments in the Sudan is the core of the following discussion.

### 8.2.1 The state's prohibitive regulations

Referring to Nile waters in particular, Dickinson and Wedgewood (1984:35) observed that population growth has led to increased demand for water for irrigation. More recently, it has been re-emphasised that irrigation, particularly in the lower Nile Basin, is a cornerstone for food security (Swain 2002:299). The effect on Nile waters of inhabitants of regions far away from the downstream RZ triggered worries even before these inhabitants arrived onto the banks of the river. Moreover, in connection with the increased demand for water there is a new di-

mension, which one scholar has particularly emphasised. 'Periodic drought has affected the Sudan down the ages, but today the new dimension is a much larger rural population on the desert margins than ever before; the *use of the Nile waters to their capacity merely caused the river to present new challenges to the riveraine peoples*' (Davies 1984:152, italics added). Failure of subsistence economies and consequent concentration of population in the downstream RZ have made these challenges a reality. This is due to the fact that large numbers of farming and herding communities from the margins of the desert as well as from other ecological zones have already settled in the potentially irrigable lands of the downstream RZ (see El Zain 2000). Through the pressure they endure, these new settlers are increasingly asserting their entitlements to resources in this zone.

However, it is to be re-emphasised here that the larger segment of the people who encroached onto the banks of the Nile after the mid-1980s did not move there voluntarily, as discussed in previous chapters. Similarly, their targeting of the downstream RZ for opportunities and settlement does not always prove a viable choice and very often they were treated as unwelcome, a bad omen.

In fact, the "borders" between the downstream RZ and the NRZ/upstream RZ have been clearly demarcated – the outcome of rescaling regulations adopted by the British, and before that the demarcation was caused by the divide between *Awlaad al-Balad* and *Awlaad al-Arab* during Mahdism (Chapter 4). These "borders", however, were reinforced through practical measures of spatial segregation, which the state set up since the 1930s to block immigrants and IDPs from reaching the opportunity niches of the downstream RZ. Six such measures can be identified in addition to the impact of centralised political regimes in the downstream RZ, the cruelty of invading troops, and obstacles caused by the nature of tenure systems in downstream RZ lands. These six measures of spatial segregation are (i) repatriation of immigrants/IDPs from the NRZ to their areas of origin; (ii) incrimination and inflicting of brutal punishments; (iii) prohibition from accessing tenancies in the central RZ irrigated schemes; (iv) demolition of homes and eviction; (v) deprivation from urban services; and (indirectly) (vi) measures such as conscription, emergency laws, and theocratic laws. While the impact of these measures was disastrous for the NRZ by way of squeezing farmers onto degraded areas, these measures were deemed important for keeping the balance of powers and maintaining the benefits from development projects for the dominant groups in the downstream RZ. Disturbing the prevailing population distribution represented a remarkable threat to the regime of control over the strategic resource/corridor/"highly valued" lands. Strategic concerns, therefore, determined the bounds of accommodation or repulsion of immigrants and IDP groups from the impoverished NRZ. Entrance to the downstream RZ seems to have always been governed by strict regulations, as implied by the nature of the newly engineered landscape and the clearly-defined rules and rights to land use – after all this is the region of privately owned land. Its old legacy of cultural divide

between the *Awlaad al-Balad* and *Awlaad al-Arab*, thus, seemed to be reinvented in a new form.

This section aims to show the “resistance” of the central RZ groups to the advance of “intruders” from the NRZ/upstream RZ. This resistance, pursued through the above six measures, presumably, dampened the demand for Nile water. Colonial and post-colonial policies contributed to this.

Since the early twentieth century the central RZ seems to have been protected strictly as the domain of *awlaad al-balad*. Besides evacuating the capital Omdurman of its population, the British colonial laws kept some communities in the Sudan apart from each other for some time, therefore, restricting movement into and settling in the downstream RZ among other regions. In connection with urban areas, in particular, policies of eviction were set up and IDPs were often denied the right to stay in downstream RZ towns. The legacy of these policies dates back to British colonial times, when they were implemented between 1930 and 1945, during the great depression – immigrants, under the Town Planning Act of 1930, were repatriated to their areas of origin (Mohamed Salih 1999:66). Employment status was used, during this period, to identify and send away intruders (for details see Mohamed Salih 1999:66) and maintain the towns for “indigenous” riverain groups, ex-soldiers, and colonial personnel and other Europeans. Actually, Khartoum’s population figures in the 1930s showed a considerable decrease from 278,000 to 255,000 (Table 6.3).

Independent Sudan, interestingly continued the same restrictions, namely in connection with accessibility to central RZ agricultural niches to groups particularly from the western NRZ (we shall detail this later in this chapter). This was especially associated with the tenancies of the Managil extension scheme established in the 1960s (detailed in section 8.4). After the late 1970s the *kasha* campaigns were one of the most important measures to make RZ cities unwelcoming for immigrants/IDPs from the NRZ. During this era, the relationship between immigrants from rural areas and urban dwellers grew sourer. By then, urban authorities, as well as urban old-timers, had created a condition of vulnerability for the immigrants and IDPs, which they were made to feel on a daily basis. In the late 1970s and early 1980s, the Khartoum municipal authorities adopted what came to be known as the *kasha* – a type of surveillance, though arbitrary, to figure out where rural immigrants were, capture, and “repatriate” them to their areas of origin or take them to the so-called “production areas” (for details on the *kasha* see Mohamed Salih 1999:65-9, Suliman 2000:410-11, Shazali 2000, 1992). The *kasha* policies became the norm, as they were maintained by the democratically elected government and are implemented even by the current NIF government (Mohamed Salih 1999:66). In towns, the IDPs were treated as third-class citizens. In the language of the *jellaba*, according to Suliman (2000:146), they were called the *shamasa* – the “‘vagabonds’, or the unemployed poor classes of the urban population’ (Mohamed Salih 1999:66). As scarcity in foodstuffs and problems in local transport increased, the ecologically marginal-

ised were incriminated and made the scapegoat for government failure. Thus, segregation along regional lines was gradually reinforced, highlighting the urban/rural divide but accommodating in towns rural groups from the downstream RZ, mostly for reasons related to having relatives to provide a hiding place from the *kasha* predators. The *kasha* policies were driven by the government's anxiety 'not to alienate the urban population and risk social and political unrest' (Mohamed Salih 1999:65-6), which IDPs were viewed as causing. In the authorities viewpoint, 'the famine victims represented a potential security risk; they were also accused of plotting to overthrow the government' (Mohamed Salih 1999:66). The harsh legal measures that the state introduced in the early 1980s targeted the IDPs almost exclusively.

The *kasha* regulations mainly targeted young "unemployed" men – those IDPs pushed to the cities by the risky conditions in rural areas. The IDPs presence in the downstream RZ was intolerable; they were to be repatriated no matter whether this would cause them to die. The first famine refugees from the western provinces, who were beginning to arrive in Khartoum and Gezira, were shipped back to their home areas (Barnett and Abdelkarim 1988:2, Markakis 1998:90-1). This happened even though it was unlikely that relief would reach them because of lack of transport (Markakis 1998:91).

The "resistance" of RZ groups was increasingly expressed in juridical regulations (primarily the *sharia* laws), which under military regimes established a reign of terror which largely, if not exclusively, targeted the IDPs. Mohamed Suliman (2000:147) points out that in 1983, when Nimeiri implemented his set of *sharia* laws, the punishment of amputation tolled 200 persons in 18 months, the majority of them from the IDP *shamasa* (see also Mohamed Salih 1999:67). 'The *sharia* laws', according to Mohamed Salih (1999:67), 'were implemented not to curb the spread of the corruption within the state machinery, as declared by the proponents of the laws, but as *a weapon against the residents of the squatter settlements, the beer brewers and the unemployed*' (italics added). Islamic laws, interpreted through the lenses of riverain "high culture", provide yet another reason for repelling/evicting NRZ intruders from the downstream RZ, primarily through incriminating some of their cultural practices (El Zain 2006b). This ultimately portrayed the IDPs as criminals, who should then on security grounds be evicted from the central RZ. A passage on IDPs in the report of the Human Right Rapporteur on Sudan, as Suliman (2000:404) notes, points out that 96 per cent of the women imprisoned between December 1993 and November 1994 were from southern and western Sudan – the upstream RZ and the NRZ of Darfur and Kordofan.

Another measure, closely related to *kasha*, was to keep "intruders" away by demolishing their homes, often called "unauthorised settlements" by government agencies. Thus, 'in order to force the migrants to leave, it ordered the demolition of their houses which were built on the outskirts of town, and used the police and the army to repatriate them to their home areas' (Mohamed Salih 1999:65-6). Protection of the downstream RZ during the 1980s in particular took an ex-

tremely violent form. Illustrative of the state's use of violent destructive power against its citizens, according to Harir (1993: 16), is 'the large-scale removal of squatter-settlers at gunpoint, from the capital Khartoum and the bulldozing of their dwellings' (see also El Nagar 1993:111).

The earliest shantytown that seemed to have bothered the authorities appeared in the 1920s. According to El-Kheir (1991:156), 'The first action against a shanty town in the capital [Khartoum] was taken in 1927, when cardboard shacks were increasing among native habitations in Khartoum North. The British Inspector Mr. Simpson, replanned the area in plots of 170 to 200 sq.m. in the same place (present location of the *deims*<sup>1</sup> in Khartoum North).' In 1949 there was a huge relocation of some 30,000 persons in the *deims* of Khartoum. After independence, cardboard shacks continued to be erected near industrial areas in Khartoum and Khartoum North, where by 1965 the population reached 30,000 and its growth started to pose a threat to the government. But it was the military government in the early 1970s that reacted to this "threat" coming from the cardboard towns. In 1971, those in Khartoum were relocated south of the Green Belt and those in Khartoum North removed to Haj Yousif (El-Kheir 1991:156-7).

Shantytowns of the kind described above were completely different from those that appeared in the 1980s; their size was smaller and their dwellers were either salaried government employees (pre-independence); or, more often, looking for better job opportunities in the urban sector in the years immediately following independence (Shazali 1988). Most importantly, however, was that the state for the longer part of this period maintained some degree of "neutrality" or rather a reasonable way of handling the situation. In connection with the demolition of immigrants' and IDPs' homes, the state showed itself as especially cruel, after declaring itself Islamic and after adopting the September 1983 *sharia*, infamously known as the "September Laws". 'Demolitions started at the end of December 1983 and continued for 8 months over an area of 25 square kilometers that was estimated at 27 million Sudanese Pounds'; '15 areas were demolished between March and May 1984 and 33 others were placed under watch' (El-Kheir 1991:161).

The demolition of such huge numbers of homes was meant to create hardship on a large scale. 'The main objective of this policy appears not to relocate squatters as much as to clear government sites. The problem was thus largely seen as illegal occupation of valuable lands more than a need of a sector of population for shelter' (El-Kheir 1991:161). It is to be noted that this was the period when the May regime (1969-85) started to stagger and as a result introduced some tough measures, including the notorious September Laws (see Majak 2000).

It is clear from the above that the groups in control of the state, whether under colonial or post-colonial rule resorted to juridical regulations to diminish the pressure on their seats of power – the downstream RZ towns. 'The continuation

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1. *Deims* are specific neighbourhoods in Khartoum built during the British rule as dwellings or 'areas for common people' (El-Kheir 1991:156).

of the practice of Kasha is a clear reminder that the Sudanese state regularly uses brute force and coercion to protect its own interest and those of the political and modern agrarian elite, at the expense of the marginalised peoples and the environment' (Mohamed Salih 1999:67). Under military regimes, in particular, demolition policies and programmes for displacing Sudanese communities have been the norm. Though the three military regimes made the central RZ an unpleasant area; nevertheless, none succeeded in keeping "intruders" at bay. Despite the humiliating experience they underwent, the repatriated young men from the NRZ seized the first opportunity to return to Khartoum, as livelihood alternatives in their areas of origin were becoming scarce or nil.

After the early 1980s the way unauthorised settlements were handled turned particularly violent on the side of the government, and this violence was counteracted by greater pressure from migrant and IDP communities. In fact, the Khartoum authorities had accommodated the immigrants in the 1960s and 1970s because their then increasing numbers were not too large and, moreover, their flow was not abrupt. Umm Badda, considered 'a typical example of an unauthorised settlement' and a 'recently settled' squatter settlement (El-Kheir 1991:161) is illustrative of the evolution of resettlement issues in Khartoum – the pressures and responses. This section looks into this example of an IDPs settlement in Khartoum in order to show that even when tough government measures were implemented, IDPs never stopped coming and settling in Khartoum – the government's very den. As a corollary, we shall see the IDPs influence and power to resist; or, in other words, their insistence to stay given the high risk of returning home. The experience of Khartoum is highlighted because demolition of migrants and IDPs' "unauthorised" homes is more apparent and generally associated with this tripartite capital.<sup>2</sup>

Umm Badda, a settlement included in the Omdurman town boundary in 1966, increased its population of 17,400 in 1964/65 to 182,000 in 1983 and to over 517,000 in 1990 (El-Kheir 1991:161; 164). Settlements such as Umm Badda gained momentum after the early 1970s. By the mid-1970s though Umm Badda's population had grown to such an extent as to become a threat, it subsequently received legal recognition as an existing town. By 1976, Umm Badda had 16,000 new dwellings, as the incentive of legality encouraged settlement within and around its *haras* (quarters) 11-18 (El-Kheir 1991:164-5). In Khartoum, for instance, 'after 1970 the whole area south of the Green Belt and between the two Niles along a line from Jebel Aulia eastward to the Blue Nile has become occupied by squatter settlements, covering an area of 50 km<sup>2</sup>' (Abdalla and Abu Sin 1991:81). This is the period when communal pressure, mostly supported by spec-

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2. We shall use Tripartite Capital to refer to three cities of Khartoum (between Blue and White Nile), Khartoum North (across the Blue Nile on the eastern bank) and Omdurman (across the White Nile from Khartoum and along the western bank of the Main Nile).

ulators, started to come out from these settlements and satellite villages located within the urbanisation boundaries (Abdalla and Abu Sin 1991:81).

As the slums grew in size, with the precedence of allocating plots to thousands of former slum dwellers, authorities had little option other than to continue with resettling new groups. Actually, after 1981 the Ministry of Construction and Public Works dealt with the problem of unauthorised settlements by way of investigating and determining the eligibility of households in those settlements for alternative accommodation (El-Kheir 1991:160). 'By 1984 the phenomenal continued growth of Umm Badda had been accepted and additional *haras* 19-23 were designated though here, as with *haras* 11-18, service provision remained negligible' (El-Kheir 1991:164). In fact, despite the official allocation of plots, *haras* 14-23 were considered nominally illegal (El-Kheir 1991:161), paralleled with mass displacement in that very year, which the government tended to neglect. Thus, it is likely that while a few appeared in the winning list of the authorities, a large number of homes were demolished.

Thus, at the margins of the hostile urban setting, what is important for the displaced was whether they had strong social bonds to protect them against the aggression of the state and the prejudices of the urban old-timers. The very presence of these largely ex-NRZ inhabitants is a strong exposition that the processes of annexing their regions to the downstream RZ did not work out "adequately" – the discourse of nation-building with its specific function of serving the elite being persistently challenged. Perceived in an ethnic categorisation, the size of the displaced allowed a significant margin for manoeuvre (El Zain 2006a).

### **8.3 IDPs are not passive: Institutional response and IDPs resistance/claim of RZ "citizenship"**

IDPs were not always at the disposal of urban political actors for mobilisation and political (ab)use. We argue that the IDPs did become actors in the domain of conflicts as well as a resource to be used by other competing urban parties. While the displaced built their own implicit alliance, they also became involved in the larger atmosphere of urban alliances. Until the early 1970s, urban areas probably were capable of providing jobs for rural immigrants and to some degree the immigrants were culturally incorporated into the modernist development discourse. Under the dominance of the development discourse, the contest in rural areas was still compatible with the modernity condition (for details see El Zain 2005), i.e. the striving to make material gains by leaning on modern institutions. The 1980s brought the reverse to this evolution and factions of the middle class resorted to the "ethnic" largely defined through its original rural nature (El Zain 2006a, 2006b). As early as the 1960s some significant changes were taking place in how rural networks in the urban setting conceived the dynamics surrounding them. According to Ahmed (1986:27),

[W]ith the growing consciousness of the unequal development among regions of the Sudan, a new form of association started to appear on the political scene. These were the ethnic or 'tribal' associations in large urban areas. They were organised by ethnic groups from remote underdeveloped areas of the country with the purpose of making the voice of those areas heard by people in power, and at the same time, of organising *self-help programmes* in their areas.

Important to note here is that these ethnic associations acquired some form of modern organisation. Their leadership, according to Ahmed (1986:27-8), 'was made of people with some experience with labour unions, and although they were not openly supported by CPS [Communist Party of the Sudan], the influence of that party in their programmes is unmistakable.'

The IDPs presence in urban areas from the 1980s up to today has stirred some significant issues. Citizenship is one prominent right for which the IDPs fervently fought. The IDPs strived to break the state's harsh measures and although they were not united, they adopted the same methods. Some practical matters unified their cause – their isolation and alienation from urban societies combined with a pressing condition of lack of material things and of opportunities to gain them.

In addition to starvation, the urban refugees have been confronted by a new set of problems, such as lack of employment due to the widespread economic recession (even when jobs are available, they do not have the skills or the education to take them<sup>3</sup>); social problems related to the despair and uncertainty inherent in the psychology of hunger and devaluation; and housing problems, which have culminated in a series of confrontations with the municipal authorities, especially in the towns of Khartoum, Khartoum North and Omdurman (Mohamed Salih 1999:60).

Accompanying this is the condemnation of IDPs as a source of pressure. In urban areas in general and in Khartoum in particular, the IDPs took on a part in a field of competing discourses, in which they were used to justify prevailing discourses and legitimise existing regimes as well as being used for transforming exiting regimes (for details see El Zain 2005). They were praised, condemned, ridiculed, abused, and damned, and on their own capacity they ventured into the field and sought new spaces to claim. Although this situation has induced conflicts among the displaced (see El-Kheir 1991:158) even among kin clans, a bloc of displaced, in contrast to a bloc of urban dwellers of specific areas, emerged at the level of the macro-political discourse. Given the price of their marginalisation, as well as the alienation they faced in urban areas, the IDPs tribal solidarity remained intact. One of the communities that has undergone the most aggressive attempts at assimilation, i.e. the Nuba, is a worthy example to show how to achieve solidarity in the face of alienation and excommunication.

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3. Al-Mahal and Omer (1992:27-8, 49) point out that the majority of the IDPs are unskilled workers who are not competent in the local market, that is why they join in the marginal jobs which do not contribute to the national development.

The Nuba people are one example which, contrary to the disintegrating condition of displacement, showed persistence in sustaining communal integration, a task for which several community-based organisations (CBOs) were created in recipient areas. These organisations played a key role in keeping the Nuba traditional social organisation and caring system intact. The Nuba people, who lack cohesive tribal institutions (Al-Karsani 2000:50), in fact, increasingly found themselves in need to reorganise themselves to confront the seemingly endless frontier status which haunts them. ‘Traditional institutions such as tribal clubs, village and clans chiefs’, according to (Al-Karsani 2000:51), ‘were formed in the urban centres to administer the affairs of clan or the village displaced, solve problems and to link the new comers to Greater Khartoum with old residents’. According to Kevane and Stiansen (1998:31),

While there is no question that Nuba groups no longer consider important, or even remember, many of the cultural practices described earlier by anthropologists, this does not mean that the Nuba have become “detrivalised”, to apply the British colonial term. Men and women, migrants and villagers, the young and the old, all continued to challenge, validate and ultimately to enact representations of their local identity.

Though the majority of Nuba who migrated to Greater Khartoum tend to organise themselves along *village-immediate* lines, the 1980s effected a modification in this social organisation by way of enlarging the bloc along *regional* lines. This was namely to include the Area Council level, which was seen as necessary for achieving unity in the face of state repression, as apparent in the evacuation of the Nuba from the streets of Greater Khartoum (Al-Karsani 2000:35).

What the IDPs of the 1980s “renovated”, as their indigenous form of social organisation, is in fact, an old strategy, by which immigrants innovate, as a way of dealing with their troubles, when governments squeeze them. El-Kheir (1991:156) mentions an incidence of the late 1940s that illustrates this pattern of solidarity. When the British administration resettled the inhabitants of *deims* of Khartoum there was no space for privacy. ‘Houses were packed in blocks of approximately 100 square meters surrounded by 40 meter roads. The population were workers in government and private establishment with very low incomes’ (El-Kheir 1991:156). These immigrants certainly met some difficulties.

However, this depressing picture was brightened by the social values of the population who shared loyalties and kept a well-integrated community which mutually supported its members. Bound by their tribal origin relations, they were clustered together in groups named after their home towns or tribes, such as Deim Ta’aisha, Deim Gawama’a, Deim Tagali and Deim Nyala or Deim Telegraph where inhabitants were mostly working in the Post and Telegraph Department. This cohesion was

perhaps one factor why the deims became seriously congested after the post-war influx to Khartoum (El-Kheir 1991:156).

The same strategies have gained momentum since the early 1980s. In the words of Al-Karsani (2000:50), 'The Nuba associations in the urban communities are gaining increasing influence among the Nuba migrants and displaced.' Al-Karsani (2000:51) continues, 'The numerous organizations are a reflection to the Nuba polyethnic nature. They also reflect the feeling of uncertainty and anxiety among the Nuba. The "frontier status" is still at play.' Such renovation of communal organisation and solidarity in urban areas by different groups and to different degrees, helped IDP communities acquire a space in the urban scenery, as the case of the Umm Badda neighbourhood illustrates.

The oppression of the dominant urban culture pushes all those who cling at its periphery to dwell inside their tribal solidarity. It is not surprising, therefore, to find solidarity groups even among those who presumably had not yet absorbed notions of ethnic solidarity, namely children and youths in urban areas. Groups of vagrant children, including those of the Nuba, appealed to these forms of solidarity, where they were 'mostly linked by tribal affiliations and usually include children of different ages' (Abdel Ati 1991:172). The displaced children in the 1980s even invented a new language – *Rondok*, a mysteriously camouflaged "language" to help small vagrant boys (*shammasa*) escape the surveillance technologies of the state's repressive apparatuses as well as of the society (urban old-timers).

Asserting different forms of social organisation, the IDPs challenge the "high culture" in its own den. Failure of the apparatuses representing the "high culture" to eliminate the IDP organisations shows their ability to manoeuvre but also their demographic weight, which has become overwhelming. The IDPs turn from prey of the downstream RZ's "high culture" into organised groups that exert pressure on it every day. Representing a demographic pressure, the IDPs can influence existing power relations, depending on the favourability of conditions in the recipient areas and the compatibility/incompatibility of the agendas of its actors with those of the displaced. Essential to this process is the IDPs' ability to reinvent their forms of social organisation, which contributed to break open the "political" as is illustrated by the example of the Nuba.

Due to their demographic weight, in 1986, the Sudan National Party (SNP) – the Nuba-backed party – won a seat 'in the squatter settlements of Omdurman (the centre of Sudanese nationalism during the struggle for independence), indicating that the Nuba were taking centre stage in Sudan's national politics' (Mohamed Salih 1999:63). This, theoretically, means that the Nuba's representation is likely to increase both in urban seats and in potential to bargain to be part of coalition governments. Regaining democracy in the Sudan and appealing to ballot boxes might bring some major and, maybe, surprising results. In this respect, advancing a despotic religious fundamentalist programme in the late 1980s and 1990s could be interpreted as the final attempt by the commercial bourgeoisie to

block any chance for democratic representation. The ruling core group in the downstream RZ would almost certainly lose its previous concessions forever should it allow the democratic process to continue. The recent insistence by the NIF government in its negotiations with the SPLM that Khartoum should remain under theocratic rule is also evidence of the insistence of the commercial bourgeoisie on maintaining tough and censoring rules to control what in its perception has become an unruly situation. In the same manner that in the 1960s the presence and rapid growth of rural immigrants in Khartoum threatened the support base of the bourgeoisie parties (Ahmed 1986:27), so too does the growth of rural immigrants imperil the fragile support base of the NIF.

The displaced effect on national politics and the influence of urban political actors is undeniable and probably will have long-lasting impacts. According to Al-Mahal and Omer (1992:51), the displaced who count about 40 per cent of Khartoum's population, have become a social, economic, political, and security instrument that cannot be demeaned. According to these authors, while in the past they remained distant from the arena of decision-making – the arena of influencing others and being influenced by them – the IDPs have now come to have effective influence on political life in the national capital (Al-Mahal and Omer 1992:60). Because the previous technologies of control and of keeping the “intruders” at bay that were at the disposal of this capital now collapsed; in fact, especially with the divisive Islamist discourse, the “ethnic” was further consolidated and centralisation ideologies discredited (El Zain 2006b, 2006c). A degree of *moralpolitik* is apparent in the presence of international NGOs and pressure of the international community for the Sudanese government to respect human rights. This represents an important pull factor to urban areas and an important window for IDPs to assert their agendas.

Environmental scarcity not only added to the weight of the IDPs, giving them more in their bargaining mix, it also brought international relief NGOs to the scene. The phenomenon of displacement at the same time came increasingly under the limelight of the international media. This proved a great aid to the IDPs in their struggle with their “own” state. Khartoum – the laboratory of national politics – seems to have been a priority destination for many displaced groups, with the city hosting more than half of the registered IDPs in the country (Bannaga 2001:36). In the view of Bannaga (2001:38), despite the long distance and the several towns that the displaced persons passed in their trek to Khartoum, the latter was their preferred destination, where they hoped to take refuge and settle. In this manner, migration to Khartoum served not only to escape the tragic situations that the IDPs experienced. In fact, there were several other reasons driving the IDPs to Khartoum. The most important among them, according to Bannaga (2001:38), was that, unlike other states, Khartoum had something to offer. Among Khartoum's preferable qualities was that the IDPs could share with the city's dwellers their meagre urban services. Bannaga (2001:38-9) adds another seven reasons for migrating to Khartoum. These include, firstly, benefiting from

the concentration of media in Khartoum, the media of the NGOs, and diplomatic missions to exert political pressure on the state. This, in his view, compelled the state to abandon other responsibilities and pay due attention to the IDPs' issues in order to lessen media and foreign political pressure (see also Suliman 2000:397). Secondly, being in the domicile of the political authority and executive leadership amounted to a permanent exposition to decision-makers allowing the IDPs to alert their representatives in legislative and executive bodies to pay attention to their affairs. Thirdly, Khartoum afforded chances for employment; fourthly, easy access to relief; fifthly, government tolerated unauthorised settlements; sixthly, Khartoum was preferred by families and youths; and finally, the IDPs were courted by the educational services in Khartoum (Chapter 3).

Communal solidarity, expressed in some form of political organisation and, more practically, in self-help institutions, especially in Khartoum, became more effective in catering for IDPs' needs. Elsammani *et al.* (1989:256) note that 'the lack of government resources means that frequently basic infrastructure services and social services are not provided. As a result in many areas of the conurbation, communities have developed self-help associations in order to provide such essential services.' The community associations, acting as 'political pressure groups' (El Sammani *et al.* 1989:257) were successful in defending IDPs settlements and in claiming the right to settle in the downstream RZ. In Khartoum, as Deborah Potts (1997:481) argues, 'the ability to organize politically is a key factor in preventing settlement demolition' (for further details see El Sammani *et al.* 1989:256-7, 1986: 20-1). Abu Sin and Davies (1991:265) consider the case of Umm Badda as representing how 'squatter settlements, called "community planning"[.] as opposed to government[-]advocated standard planning, managed to acquire an "urban status"'.

Umm Badda set the pattern for *forced recognition* for other settlements by adopting self-generated institutions which tap the community resources and design the settlement in a way to be acceptable as a *de facto* situation by the authority. This process has confused the authority so that it is no longer sure where to put the line between "acceptable" and "unacceptable" and thus encouraged other migrants to adopt the Umm Badda model as a step towards official recognition (Abu Sin and Davies 1991:265, italics added).

Large numbers of IDPs, accordingly, claimed their space in downstream RZ towns. Nevertheless, this was not the end of restrictive measures, such as IDPs eviction.

When the situation became too difficult to control and the slums spun out of administrative control, the government resorted to other measures to discourage IDPs from staying in or around towns. According to Bannaga (2001:52), the state prohibited the extension of services to unplanned neighbourhoods, though the lat-

ter occupied an expansive residential area<sup>4</sup> (see Al-Mahal and Omer 1992:53, Duany and Duany 2000:180, Ahmed and El-Battahani 1995:196). However, policies such as eviction and repatriation actually reflected the increased decay of exclusivist minority-favouring regimes. They accelerated the waning of development discourse and gave more credence to the “ethnic” and ethnic solidarity, which ultimately led to weight being given to IDPs, prompting urban political groupings to bet on them, a subject extensively detailed elsewhere (El Zain 1996a, 2001, 2002, 2006a, 2006b). In this regard, despite all the restrictions, the IDPs have prevailed – they have, to a large extent, compelled the authorities to recognise and resettle them. El-Kheir (1991:158), referring to the rapid increase of IDPs in Greater Khartoum, wrote, ‘Growth at such rates had been continuing in spite of all measures to stop it by deportation, relocation or eviction and demolition.’ Authorities’ harassment of the immigrant and IDPs, who were (and are) largely from the NRZ and in recent decades included those from the upstream RZ, applies to almost all periods and certainly continues up to this day.

### 8.2.3 Institutional responses to IDP pressures

At the peak of the 1984-85 famine crisis, upon the arrival of the IDPs, the May military regime set up bodies to deal with the situation. According to Gamal Mahmoud Hamid (1996:130), three such bodies were set up after mid-1984. Firstly, a military committee was assigned to direct relief operations; secondly, the Higher Council for Relief was established; and thirdly, the Higher Council for Mitigation of Disasters, Drought and Desertification was set up. However, these institutions seemed incapable of coping with the magnitude of the problem and providing quick solutions. Similarly, the Islamic laws (September Laws) failed to restore President Nimeiri’s rule. The popular masses, including the agonised shantytown dwellers, brought the May regime to an end in April 1985.

By the mid-1980s it became clear that population concentration in the central RZ would continue and that the IDPs were unlikely to return to their areas of origin. The apparent change of regime in April 1985 brought some clear policy changes towards the IDPs. In 1985 a report to the Council of Ministers indicated that there were 91 unauthorised settlements (32 in Khartoum, 30 in Omdurman and 29 in Khartoum North), which housed more than half a million people (El-Kheir 1991:158). ‘The Council of Ministers in October 1985’ – six months after the collapse of the military dictatorship – ‘passed resolutions concerning the formation of the Directorate for Spontaneous Housing and a relocation project involving 50,000 families’ (El-Kheir 1991:161).

During the third democratic rule (1986-89) the Umma Party, leading the coalition cabinet, “recognised” the plight of the IDPs. In 1986 the Relief and

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4. IDPs settlements, according to Abdalla and Abu Sin (1991:81) had occupied a large area, where in 1989 squatter settlements and shantytowns in Greater Khartoum accounted for no less than 44 per cent of the residential land.

Rehabilitation Commission (RRC) was established to provide basic and urgent services for the IDPs (Bannaga 2001:63). In 1988 a National Council for Internally Displaced Persons' Affairs was set up with the objectives of surveying the IDPs to assess their relief needs, formulate a security plan to prevent crime among them, and mobilise and coordinate national and international resources to rehabilitate the affected areas (Hamid 1996:130). During this period, towns known as Dar As-Salams, on the outskirts of the tripartite capital, were planned and constructed to which slum dwellers were removed (Bannaga 2001:78). Of 1.35 million IDPs according to the official estimate for June 1985, El-Bushra and Hijazi (1991:254) note that 'some 600,000 (45%) were located in the Capital Region'. These IDPs 'are settled in 23 sites recognised as settlements by the government' (El-Bushra and Hijazi 1991:254).

Following its *coup d'état*, the NIF government engaged the IDPs in fierce campaigns of bulldozing their dwellings (Harir 1993:16, see also El Nagar 1993:111) killing some in the process of resettling them (Ahmed 1993 :117); however, it finally resorted to "accommodating" them along similar lines as the Umma Party policies. However, this did not end the government's cruel treatment of the IDPs. Government killing of IDPs continued, as their streams never stopped flowing into towns. It is important to note here that the NIF policies of dislocation and eviction were not confined to the major RZ towns. In fact, the regime engaged in dislocating large numbers of peoples from southern Kordofan, particularly Nuba people, to northern Kordofan as part of its war and religious policy in that region. 'Between 1991 and 1993 an estimated 20,000-30,000 Nuba were deported from the Nuba Mountains to Northern Kordofan, where they have been settled in semi-desert areas not conducive to agricultural production' (Mohamed Salih 1999:69, see also Suliman 2000). This process of dislocation was originally connected to the capturing of Nuba natural resources; however, in recent years capturing was pushed to the extreme – making the Nuba themselves a resource to serve the political and ideological ends of the NIF. 'The so-called "peace camps"', to which the Nuba were dislocated, 'are in reality part of the "Comprehensive Call" campaign, and are located in some of the most desolate desert-towns such as Shaikan, Bara and Um Rwaba' (Mohamed Salih 1999:69, see De Waal 2000:42). According to some sources, processes of dislocation/relocation are continuing till today (see *SPLAToday.com* 23 January 2004). Shantytowns in major urban areas were made to serve the same purpose as the "Comprehensive Call" campaign, including being the source of recruiting the *mujahideen* of the People's Defence Forces.

In 1993, following the adoption of the extended federal system in the Sudan, the RRC, was renamed the "Commission of Voluntary Action" (COVA). As IDPs problems became more complicated and as the number of operating NGOs increased, Khartoum State constructed, in 1995, a special apparatus to cater for the IDPs, known as the Humanitarian Assistance Commission (HAC) to carry out the functions of the RRC and COVA (Bannaga 2001:63). Around the tripartite

capital alone, the number of permanent settlement sites for the IDPs had reached 38 (Ahmed and El-Batthani 1995:205). In addition to these settlements, there was a shift from government's large-scale bulldozing of homes of the "demonised" IDPs to a sort of "blessing" and "accommodating" them. This shift reflects the influence that the IDPs came to exert on national politics, which in the final analysis, implies policies for using Nile water for irrigation. These dynamics were attributed to the rise in the political arena of the two commensurable discourses, i.e. the "ethnic" and "religious" discourses (El Zain 2005, 2006a). This is, in essence, an indicator of the collapse of modern state institutions caused by environmental scarcity and shows how the "ethnic" became a theme for the "strategists" of the ruling fundamentalist party.

In the 1990s, contrary to the hostile urban attitude towards the IDPs, some researchers known as active NIF cadres and government officials who did extensive research on the IDP subject came to engage in or adopt, in our view, a political economy approach to causes of displacement, thus, refuting the then-growing superstitious attributions to this phenomenon. Causes of displacement were clearly spelled out as being "man-made" and, as a corollary, "earthly" solutions were considered in research contributions by NIF cadres (see, for instance, Bannaga 2001:31, Al-Mahal and Omer 1992, Mohammed 2001a). These researchers/officials endorsed policies for rehabilitation and resettlement of the IDPs. Al-Mahal and Omer (1992:79-80), in particular, suggest medium- and long-term solutions to the IDP problems directly connected with expansion of irrigated agriculture and resettlement. In the medium term, they explicitly suggest the construction of agricultural schemes that depend on permanent irrigation with the aim of absorbing the IDPs' labour, whether this be in the areas of origin of the IDPs or elsewhere. These schemes, they suggest, would provide basic services so that the IDPs can finally settle and break the cycle of repeating tragedy upon every new drought.

Al-Mahal and Omer (1992:81), whose research greatly influenced policy towards the IDPs, as we shall see later, suggested a number of options all based on expansion of irrigated agriculture. These include the construction of agricultural schemes to be modelled on the Rahad and New Halfa schemes, around which productive villages would be constructed and basic services provided, preferably located nearer to the IDPs' former environment. They note that a canal, for instance, could be constructed in a north-westerly direction from the Jebel Awlia Dam to irrigate a million *feddans*, and diverse farms could be established for animal and plant production and for resettling the nomads (see Waterbury 2002:137). They also suggested the construction of similar schemes in different valleys in western, eastern, and southern Sudan. In the long run, the authors suggest the eradication of the causes of displacement, which should help maintain a balanced population distribution.

The fatalistic approach of the NIF, with its inherent denial of material needs (El Zain 1996a), is thus gradually being renegotiated, even among Islamist politi-

cians. The *wali* (governor) of Khartoum started to conceive of the complexity of the IDPs issue by seeing economic factors as the ones responsible for making of Khartoum more of a commercial city than a political capital. For him, migration is connected to the economic reality of the states affected by war, poverty, and the absence of real development projects that provide suitable work opportunities (*Al-Sahafa* 16 April 2001). According to the Minister of Engineering Affairs of Khartoum state, Sheref Eddin Bannaga (2001:34, 101), besides the civil war, mass displacement of population is attributable to the impact of economic structural adjustment policies and the unsuccessful development policies of previous governments. The minister of agriculture also engages in this discourse and asserts the need to incorporate international organisations in carrying out development for building permanent self-capacity instead of concentrating on relief (*Al-Ayaam* 2 April 2001). Inside this "political economy approach" out-migration to other states in the Sudan is considered an obstacle to the development schemes in the localities (*Al-Ayaam* 22 March 2001). The solution, in the view of Khartoum's governor, is that the war- and drought-affected states should be helped so that their inhabitants no longer desert them (*Al-Sahafa* 16 April 2001). As we shall see later, some of these (drought-hit) states received some attention in the form of irrigation projects.

The 1990s seems to have witnessed a degree of "bias" towards the settlements of the IDPs, being the source of support and/or the bet of the government for support as well as to avoid some negative consequences they might cause. These concerns were clearly expressed in an interview with the governor of Khartoum state. A reporter of *Al-Sahafa* newspaper (16 April 2001) interviewing the governor said, 'There is a tendency towards ruralising Khartoum through transferring services to the slum areas for realising political ends and legitimising the non-civilised appearances while the slogan raised is [to make of Khartoum] "a civilised capital".' The governor responded that 'concerning the issue of ruralising Khartoum, this ...has taken place already and is being accomplished and the cause is the economic problems in all the Sudan'. The governor went further to ask, 'If a Sudanese citizen comes to Khartoum and resides in the slums, in your point of view what shall we do for him given that he is a Sudanese citizen in the capital of his country?' Security issues at this stage seemed to overwhelm Khartoum state and preoccupy its governor's mind. The governor during the interview exclaimed, 'Is there any solution other than to try to provide him [the displaced person] with the basics and services in his place of residence? We must legalise his position and not leave him in disarray', since leaving the situation as such will 'lead to repercussions worse than what is currently taking place' (*Al-Sahafa* 16 April 2001).

The IDPs have come to take centre stage in a discourse about "unity", "citizenship", and "peace". The presence of the IDPs in Khartoum, for Mohammed (2001b:1), is not only good for generating more acculturation and solidifying the unity of the Sudan, but it has also led to significant changes. According to him,

the accommodation of the displaced in planned neighbourhoods has led to an urban revolution and will lead to another revolution that will manifest in the process of development of the Sudanese character (Mohammed 2001b:1). Along similar lines, Minister of Engineering Affairs in Khartoum state, Sheref Eddin Bannaga (2001:64), painted a picture of consolidating the unity of the Sudan. He sees the migration of the southern Sudanese to northern Sudan as an indicator that they found security in this region. According to him, this will certainly add to consolidating national unity, endorsing the belief among southern Sudanese that they are an original part of the people of the Sudan, and strengthen national integration amongst the population. Thus, for him, tackling the IDPs' problems, accommodating them and lessening the severity of their suffering, must be the highest of all priorities in the country. For the minister, dealing with the IDPs' problems is a strategic issue, as it determines national unity and peace. The population dynamics we are witnessing today, according to him, are not all evil, as the IDPs who are congested now in Khartoum could be a factor for achieving good – they represent an incredible productive power if properly employed (Bannaga 2001:282-3).

Contrasting the above with the discourse of the same Islamists when they were the *de facto* rulers of the Sudan during the second half of the Nimeiri dictatorship, we notice a justification in relation to the aggressive campaign of demolishing the IDPs' slums. That is, 'We are handling illegal housing for the sake of controlling the national capital, for its order, cleanliness and beautification. May God help us towards the benefit of our beloved country' (cited in El-Kheir 1991:161). The difference between the Islamists under Nimeiri and the Islamists running the state on their own, however, was in the political value attached to the IDPs; strictly speaking, the political exploitation of the IDPs, in competition with other political parties, for fuelling the bloody civil war and distracting the public from legitimate demands for material needs and services, therefore, "managing" the economic crisis.

This sudden retreat from an overwhelming rhetoric of *jihad*, which left no room to discuss people's material needs, is in part a result of the waning of the euphoria of the first successful coup led by the Sudanese Islamists and in part a result of the changes in the regional and international environment. Displaced groups are at the core of these dynamics; a few of them were frustrated by the failing promise of an Islamist state; others suffered from the NIF "civilisation project"; some advocated their cause by appealing to ethnic, regional, and international solidarity to help rid themselves of the Islamist regime. They, therefore, gradually came to question the legitimacy of the regime and called to arms in resistance to its authority. The state seems to be considering some degree of responding to popular demands by way of refurbishing its political alliance as well as by reacting to pressure from the international community. The above-mentioned researchers and official positions have, in the end, induced a new policy course, with its objective to resettle groups of population along the

banks of the Nile and its tributaries. We shall elaborate on these policies in connection with food security discourse below.

#### 8.4 Food security discourse and increasing demand for Nile water

For decades, migration and resettlement in rural RZ areas was predominantly associated with wage labour – not with seeking food *per se* – and was encouraged by the British, who even promoted the inflow of labour from beyond the borders of the Sudan (Chapter 6). As noted in the first section of this chapter, independent Sudan, interestingly, issued regulations that restricted accessibility to the central RZ agricultural niches to groups previously encouraged by the British colonial administration to migrate to these same niches. Shaw (1987) draws a contrast between the Gezira Scheme, which was established during the British rule, in 1925, and its Managil extension, which followed some four decades later in 1962, i.e. six years after Sudan acquired its independence. ‘The main contrasts are that the Gezira Main Area contained a larger number of “westerners” (people from the Western Sudan, the former French Equatorial Africa, Nigeria and West Africa), and expatriates at the moment of [1956] Census’ (Shaw 1987:153). Abdelkarim (1992:80) points out that the depressed price of cotton on the world market and local tenants’ consequent abandoning of their tenancies during the 1930s and 1940s caused the government to offer tenancies to the westerners. Accordingly, he notes that in 1933-34 there were about 2,000 westerner tenants whose number then rose to 3,000 by 1944-45.

The policies adopted in the 1960s, however, made the influx of westerners less marked in the Managil extension (Shaw 1987:154) and, seemingly, established a claim that the downstream RZ was exclusively reserved for riverain stock. Or, put more clearly, that tenancies of the Managil extension were now restricted to the “Sudanese”, a term which excluded, at least partly, the western Sudanese (Table 8.1). In contrast to the Gezira, tenancies of the Managil extension were almost exclusively allocated to persons of Arab origin (Table 8.2). All groups that had tenancies in the Gezira Scheme, save the Arabs and the Beja, had fewer relative shares in the Managil extension. The Nuba, Nubians, southerners, and westerners together represented 17.9 per cent of the population of the Gezira Scheme. In the Managil extension, they constituted only 5.2 per cent (for details see Shaw 1987:154). Of all categories, save “foreigners without a Sudanese status”, NRZ western Sudanese were the greatest losers in representation in the Managil extension; they represented 1.8 per cent of the population of this scheme, compared to their figure of 12.9 per cent in the Gezira (Table 8.2).

Environmental scarcity seems to have broken open the restrictions and regulations that historically protected the downstream RZ from mass immigration and settlement of groups from the NRZ/upstream RZ. Most importantly, the 1970s and 1980s witnessed the movement of large populations, namely farming and herding communities, who settled in the central RZ as a survival niche. Groups

Table 8.1: Tenancy distribution in the Managil extension

Origin	Managil extension		Gezira Main	
	No.	%	No.	%
A. Sudanese				
Rights-holders	8,414	27	4,453	14
Local inhabitants (b)	20,021	67	25,763	79
Other Arabs	1,968	6	326	1
Western Sudanese	40	+	712	2
Total	30,463	100	31,254	96
B. Foreigners				
Central African Republic & Chad	19	+	925	3
Fellata, Berno, Hausa	1	+	346	1
Western Sudan	-	-	79	+
Ethiopia	-	-	2	+
Egypt	-	-	6	+
Total	20	+	1,386	4
C. Grand total	30,463	100	32,460	100

Notes: (a) Excluding part I, stage 4; (b) former cultivators (ommar); (+) Less than 1 per cent; percentages rounded to the nearest whole number.

Source: Shaw (1987:155).

Table 8.2: Tribal composition of the Gezira, % of population

People	Managil area (%)	Gezira Main area (%)
Arab	90.3	76.5
Miscellaneous	0.6	0.8
Nuba	0.4	0.6
Beja	3.3	1.6
Nubiyin	2.0	3.1
Southerners	1.0	1.3
Westerners	1.8	12.9
Foreigners (a)	0.1	0.2
Foreigners (b)	0.5	3.0
Total population	369,632	517,697

Notes: (a) With Sudanese status; (b) with non-Sudanese status.

Source: Shaw (1987:154).

from the Eastern Region, including those who had no history of practising agriculture, such as the Rashaida, started to settle in the Rahad scheme area (see Al Bander 2000:280).

The 1980s drought brought large groups – whole NRZ/upstream RZ tribes or large fractions of them – into the downstream RZ. Thus, if we move north along the Nile axis from the Central Region, the Shweihaat and Dar Hamid migrated to rural areas of Omdurman, the Greiyyat tribe to the north of Khartoum Province, and the Hawawir tribe of Northern Kordofan migrated to the Northern Region (Bannaga 2001:35). That last tribe, i.e. the nomadic Hawaweer tribe made the

trek to the neighbourhood of Ed Debba and Kurti (for details see Haug 2000). Further north in Dongola on the bank of the Main Nile, settlement of 'members of nomadic tribes coming from the Western Desert, which is largely inhabited by Kababish, has been going on for a long time and has especially *intensified in the wake of a series of droughts*' (Abdelkarim 1992:115, italics added). The same process of population concentration is taking place along the Atbara River. Hassan Abdel Ati (1992:23), referring to the population of the lower River Atbara area, states 'only those in the extreme lower part (originate from Nile area), enjoyed settled life for over a century. The rest consists of ex-nomads from the Butana and eastern Sudan (Red Sea Area) who were forced to settle along the river banks by repeated cycles of drought in their areas.'

The same area witnessed 'the settlement of large numbers of drought stricken nomads after the 1984/85 famine' (Abdel Ati 1992:34). These are but a few examples of dozens of tribes or clans which took refuge in the downstream RZ. Tribes from zones not hit by drought also clustered along river banks where there were agricultural schemes. Paul Wani Gore (1987b:96) points out, 'In recent years it has been observed that other nomadic tribes from southern Blue Nile Province have been settling in Renk District in large numbers.' The reasons behind sedentarisation in this upstream RZ district are obvious – 'they have been pushed away from their original areas by the expansion of the mechanized schemes in Damazine area' (Gore 1987b:96).

Rural resettlement in the downstream RZ has now become a must; this time it will cover all of the RZ from upstream to downstream. Facing the consequences of droughts, people have come to view the downstream RZ, especially the central RZ, as the only option for refuge, a process documented by many scholars (Markakis 1998:90, Harir 1993, Abu Sin 1995:14, Suliman 2000:396, El-Bushra and Hijazi 1991:254, Hassaballa and Eltigani 1995:33, Beck 1998:276, Abu Sin and Davies 1991:268). 'The Nile River cuts across the ecological zones that house all the population engaged in the vulnerable traditional sector. Because of its valuable water and soil resources, it also accommodates modern-sector activities and is the refuge of the surplus population discharged from the traditional sector' (Abu Sin 1995:14). In addition to the desire to benefit from these bountiful resources, the increasing aridity of northern Sudan has made the downstream RZ the inevitable refuge sought by groups of population from the NRZ. In fact, it is the only refuge for these rural groups because it is where they can maintain their art of agriculture. 'The central riverine region is least affected by national rainfall patterns because cultivation there depends on irrigation, not precipitation' (Markakis 1998:89). In this respect, the river operates as a population-pull factor for settler-farming communities.

The philosophy which gave "recognition" to IDPs in the urban RZ seems to have spilled over to their less-influential kin in the rural RZ. Economic development, largely espousing the recommendations of NIF researchers to establish agricultural schemes for resettlement, has now become the main driving force.

The earliest attempts to resettle population groups took place farther downstream in the arid RZ in the River Nile State and the Northern State. In 1994, the so-called “Northern State rehabilitation projects” began cultivating 8,000 *feddans* (Elsheikh *et al.* 1999:260). In 1996, the government adopted policies for resettlement of population groups. In that year, the committee in charge of the resettlement programme discussed the budget and preparation of “peace villages” and their provision with basic necessities (*Al-Ayaam* 22 March 2001). Abu Hamad Province, one of the provinces of River Nile State in northern Sudan, suffers persistent out-migration due to the narrowness of the available cultivable land. To overcome this, the province, in cooperation with the Ministry of Agriculture, initiated ambitious plans to establish new schemes for agricultural and animal production in Wad Feel, Keer Al-Zain, Al-Hiweila, Al-Shallāl, Al-’Aamrāb, Al-Kiheila, and Abu Hamad (*Al-Ayaam* 22 March 2001).

In the River Nile State, the Nomads Resettlement Administration was recently established for the purpose of economic development, stability, and human development in the state (*Al-Ayaam* 27 March 2001). The director of Nomad Arabs and the Displaced Resettlement in the River Nile state announced the commencing of the programme of *al-Ee’tisām bil-Amn al-Ghizā’ee* (“consolidation through food security”). The village settlements project/Atbara with an area of 200,000 *feddans* for accommodating 400 households (average of 16 persons<sup>5</sup> per household) (*Al-Ayaam* 27 March 2001) was considered to have entered the advanced implementation stage. According to the director, this was the first project in the programme at the level of Damer Province, and operations in the project have reached the stage of canal digging and plot distribution with five *feddans* for each plot. The project is being attached to a dwelling area (town), which itself is part of the project, with medical, educational, and other services, designed to absorb the first stage of residents (*Al-Ayaam* 27 March 2001). It worth noting that the area cultivated with winter crops in the River Nile state reached 320,000 *feddans* in 2003. There are ambitious plans for expansion of irrigated sesame (*Al-Ray Al-Aam* 10 July 2004).

As we shall see below, there are more than 100 small- and medium-scale schemes either being constructed or conceived, which will certainly include some form of resettlement of IDPs. In fact, a combination of factors, including severe pressures on the IDPs to seek survival alternatives and the cheap labour they provide have all made expansion of irrigated agriculture and resettlement in rural area inevitable. The severity of these pressures is exemplified by the conversion of the Hawaweer nomadic tribe from pastoralists to farmers.

The nomadic Hawaweer, faced with the reality that there were no jobs to suit their herding experience, started to engage in and learn local activities in recipient areas. Both Hawaweer men and women, according to Ruth Haug (2000:7),

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5. This size probably apply to the extended family members who are still in the area. Usually the extended family is much larger than this.

'learned agricultural practices in the North/Nile area where they have gone for seasonal labour opportunities as a part of a diverse and mobile livelihood strategy'. This was reinforced later, when the Hawaweer 'also learned agricultural practices in the Nile area as a result of the *distress migration*.' (Haug 2000:7).

Importantly, the IDPs fill jobs and perform functions that had been done by riverain natives, before the latter left these tasks due to their social mobility. Barnett and Abdelkarim (1991:13) note, 'The people of northern Sudan, and particularly of the Gezira, are able to leave their areas of origin owing to a scarcity of land and the comparative advantages of paid jobs in urban areas or elsewhere in Sudan.' In addition, they have been privileged by "qualifications" that have recently become an advantage. 'Their historical and cultural background ("Arab"-Muslim) and a relatively high degree of social "sophistication" compared to other rural populations, makes it easier for them to seek paid jobs in Arab oil-producing countries' (Barnett and Abdelkarim 1991:13). The labour needs arising from the departure of such groups are filled by less-privileged groups such as nomadic "Arab" tribes and "westerners" (Barnett and Abdelkarim 1991:13).

Moreover, being a source of cheap labour, the IDPs become the targets of owners of both licensed and unlicensed agricultural schemes. In connection to the first, Davies (1991a:114) provides an interesting perspective, in which he refers to the Jummuiya Scheme, located 30 kilometres south of Omdurman.

In theory the Scheme had much to commend it, but it appears to have been in the wrong place with the wrong people at the wrong time. Hope has recently been expressed about a possible improvement. Certainly the local people have an interest in vegetable production, but do not wish to exert all the year round effort. The rapid increase in the population of Omdurman due to *drought conditions* especially in north Kordofan has provided a *local work force* that could be hired for cultivation (Davies 1991a:114, italics added, see Hamid 1996:129).

Recognising the plight of the IDPs and resettling them has brought to attention some new concerns, or consequences, to be more precise. Important among these is the effective engagement in a food security discourse that seems to have reinforced a "grains irrigation policy" a great deal.

#### **8.4.1 IDPs: From rainfed grain surplus producers to dependents on RZ food surpluses**

The NRZ regions that were hit by famine, namely in Kordofan and Darfur, were historically food-surplus or self-sufficient, and they continued to provide the national budget with surplus grains until the late 1960s (Chapter 5), besides receiving those groups escaping food scarcity in the downstream RZ. Recent decades' "hazards", however, ended this situation.

Socially, ecological degradation, drought and famine has meant an accelerating rate of migration; mostly from the *central rainlands* to *riverain Sudan* and to the capital towns in particular... In its crudest but correct sense, migration means the loss of labour to the urban centres and the transformation of about 7 per cent of the rural population every year to *food consumers* (Mohamed Salih 1987:4, italics added).

What the 1980s-hitherto migrants/IDPs want is by now largely clear – in several studies, the search for food features high as the reason for migration to the RZ. According to Markakis (1998:90), ‘When people began to *starve* in Dar Fur, their only option was to move to the *central riverine region*, an immense distance’ (italics added). Mohamed Suliman (2000:i) notes that 4 million IDPs moved to central Sudan, where *food security* was relatively better. He points out the correlation between the size of the moving groups, be they refugees or IDPs, and problems of food security (Suliman 2000:396). Such large numbers of IDPs and dispossessed people, Mohamed Salih (1999:60) notes, ‘migrated to towns and urban centres to be within reach of relief supplies’. The IDPs ‘come *looking for food*, shelter and employment’ (El-Bushra and Hijazi 1991:254, italics added, see also Hassaballa and Eltigani 1995:33, Beck 1998:276). Food is one among several things that pull the IDPs to the downstream RZ. ‘People perceive that the minimum they can get in Greater Khartoum is not attainable elsewhere. This includes relative security, the chance of picking a job, the opportunity of *living on the urban people’s surplus of food*, etc.’ (Abu Sin and Davies 1991:268, italics added; see also Abdelgalil 2000:43; Ahmed 1993 :118; El Zain: 1996a, 1996b; Gore 1991; Hassan, 1995, El-Mekki 1990).

Since the mid-1980s and up until now the food crisis in the Sudan has persisted. Those IDPs who moved southward or settled around cities and towns ‘are now facing unemployment, insecurity, hunger, and famine in the newly settled areas’ (HCENR 2003:7). Food sought by the IDPs in towns is also a concern of the presumably “relaxed” townspeople, in so far that bakeries run out of it every now and then and its prices are raised because of “extra” IDP demand. Food security has become the task of the “agitator propagandists of the revolution” and other NIF cadres. Of course, it has engaged large number of humanitarian NGOs as well, with their conflicting discourses of praising and “defaming”, creating incentives and pressures on governments to consider the food security situation in the country. A major difference we must note and which we shall discuss below is that the IDPs’ food types changed when they entered a different “grain zone”. Large segments of the inhabitants of the “millet/cassava zone” are now settling in the “wheat/sorghum irrigated zone”, which has significant effect on the expansion of irrigated agriculture (for further details see El Zain 2006f). As we shall see below, the degree of population concentration in the downstream RZ caused significant expansion in irrigated area; therefore, more water from the Nile is being demanded for that purpose. This is structurally associated with the resource capture regime we discussed in Chapter 4. The pattern is one of “capturing”

productive-sector areas and sending their former owners to service-sector (urban) areas. Areas captured early on became degraded and, therefore, served neither as a viable locale for their owners to return to nor for their capturers to produce food so as to support urban consumers, which now include the former food producers among their ranks. The grain dearth caused by these circumstances generated greater opportunities for the agricultural lobby, which then began speculating on greater fortunes associated with irrigated agriculture. In fact there is little doubt that all of the new agricultural schemes that were established in the 1990s are almost exclusively owned by the Islamist agricultural lobby as part of the NIF party strategy of "Tamkeen" (empowerment) of its cadres. To some extent the whole National Comprehensive Strategy (NCS) launched in 1992 (detailed below) has to do with creating opportunities for the cadres of the NIF.

#### 8.4.2 Food security discourse and expansion of irrigated area

Chapter 3 noted briefly the flourishing trade in the era before the Turkish invasion, including primarily agricultural products (cotton) manufacturing in the downstream RZ, which occurred mainly due to slave labour. That same chapter noted that the Mahdist era witnessed an expansion of the irrigated area and improvement of cultivation methods, which likely was caused by the concentration of populations in the downstream RZ (Chapter 6), following the ridding of the Turks from the region. Otherwise, the downstream RZ had throughout centuries maintained a slow expansion of its cultivated area, and because of limited cultivable land it always sent "extra" population to the plains to the west and east (i.e. the NRZ). However, technological innovations, particularly those that accompanied modernisation, dramatically increased the size of the cultivated area.

Farmers in the Northern Region cultivated wheat for millennia, and this crop was considered for modern irrigation upon the earliest introduction of pump schemes in the Zeidab area. In 1907, of the only 672 hectares under modern pump irrigation half of the area went for wheat, while the remaining half went for cotton (Gaitskell 1987:103). Until the end of the 1950s, the area cultivated with wheat did not exceed 15,000 hectares; but its produce was enough to cover the needs of northern Sudan including towns, while the other parts of the country were dependent on sorghum, millet, and cassava (Abdalla and Nour 2001:40-1). Whereas wheat was cultivated by irrigation along the banks of the Nile, all other grains (sorghum in central and eastern Sudan, millet in western Sudan and cassava in southern Sudan) were produced under rainfed conditions (Abdalla and Nour 2001:41). 'However, with the *expansion of the urban communities* in the last 50 years, food consumption habits have changed, and *wheat consumption has soared* to about a million tons annually. The wheat area expanded from about 75,000 hectares in 1989, to 415,000 hectares in 1992' (Abdalla and Nour 2001:41, italics added). In fact, the area under wheat reached its zenith in the 1990/91 season at over 460,000 hectares (GAPS 2000), when the zealous food se-

curity discourse was at its zenith too. Currently, wheat has replaced sorghum as a staple cereal, which in turn has impelled the state to increase its area (*Al-Ray Al-Aam* 05 November 2004a).

Policies driven by a food security discourse together with the availability of cheap labour provided by a large number of immigrants and IDPs contributed significantly to this expansion. The high proportion of imported wheat and the effect of drought on the production of sorghum and millet ‘provided large incentives to expand the utilization of domestic resources in wheat production, although wheat requirements are also intended to be reduced through a promotion of bread-making technology with composite flour’ (Faki *et al.* 1995:458). The rapid urbanisation described in Chapter 7 implies big leaps in the size of the area cultivated with wheat (as we shall see below). In fact, the years when urbanisation gained momentum also witnessed a dramatic increase in the irrigated area – ‘Sudan’s wheat area was expanded by 600% between 1984 and 1994 to as much as 357,000 ha in 1994’ (Tyler 2003).

The area cultivated with sorghum, on the other hand, witnessed expansion in the 1940s, beyond the traditionally cultivated area, when the British first introduced mechanised farming to ‘provide food for the troops during the Second World War and later to feed the growing urban population’ (Ahmed and El-Batthani 1995:195). Its largest expansion, however, followed in the post-independence era and certainly exceeded that of wheat, reaching ‘at least five million acres in the 1960s and 1970s’ (O’Brien 1985:27). The area cultivated with sorghum reached about 38 million *feddans*, involving both licensed and unlicensed schemes by the end of the 1980s and by mid-1992, plans were completed for cultivation of 40 million *feddans* more (Suliman 2000:131-3).

An interesting thing about sorghum was that demand for it increased, not because of a change in lifestyles, but rather because of the very process of expansion in its production. Because payment for labour involved in sorghum production was partly made in kind (O’Brien 1985:24); sacks of sorghum were exchanged for work, which in this case involved thousands of immigrants. In the Gedarif area, Abbas Abdelkarim (1992:93) roughly estimates that 350,000 casual workers and 8,000 machine operators were involved in the sorghum harvest of the 1982/83 season (see also Mohamed Salih 1987:112). A labour population of this size, in the largely sorghum-producing schemes, certainly boosted demand for this crop and likely contributed to making it the staple food for a large number of households nationwide who previously either depended on millet or cassava. Worthy of note here is that a large number of seasonal workers also travelled to irrigated schemes and might have contributed to boosting the production of sorghum. Numbers of seasonal workers at the Gezira Scheme alone between 1970 and 1979 fluctuated between 261,000 and 365,000 (Abdelkarim 1992:89). In other words, large groups of population in western and southern Sudan, whose subsistence economies were failing, now became dependent on sorghum, as their main staple food.

The shift to sorghum consumption would cause another transformation, i.e. producing sorghum under irrigation, as its production under rain-fed cultivation (mechanised and traditional), due to climatic reasons, proved insufficient for meeting the heightening demand. 'With the uncertain situation of sorghum and millet production under rainfed conditions, *irrigated* sorghum has also gained increasing importance' (Faki *et al.* 1995:458, italics added). Irrigated sorghum area increased from virtually nothing to 450,000 *feddans* in the Gezira Scheme alone (*Al-Ray Al-Aam* 05 November 2004b). One structural change that enhanced this trend was that farmers abandoned the cultivation of millet, as noted in Chapter 4. The sharp rise in prices of cash crops led to diversification away from millet (Umbadda 1981:110) and of course sorghum stood as the main alternative if not the sole one. 'In Eligayla village in Western Sudan, for example the villagers started to grow sesame as a cash crop in the 1920s, and, having limited labour resources, they replaced the time-consuming *dukhun* (millet) by *dura* (sorghum) as food crop' (Abdelkarim 1992:15).

However, the biggest push towards leaning on irrigated sorghum as the main source of food has to do with the erratic rainfall/the occurrence of concurrent droughts. We argue here that the grain dearth caused by droughts and felt especially in urban areas in the downstream RZ has led to some adaptive measures by government. Two are discussed in this section – one is manifest the replacement of cotton in large irrigated areas by sorghum and another is the increased tendency to construct small and medium-sized dams and agricultural projects instead of the huge development projects that traditionally characterised irrigated agriculture in the Sudan (Chapter 4).

Grains production, in response to pressures and the food security/insecurity discourse, acquired priority over cotton. The latter, Sudan's main export crop, fell to its lowest level (181,000 *feddans*) in the 1992/93 season (GAPS 2000:5). This shift becomes even more apparent if we compare the average area cultivated with grains to that of cotton and groundnuts in the Gezira Scheme for two intervals of ten years (i.e. the 1974/75 season to that of 1983/84 and the 1984/85 season to that of 1993/94). In the second interval the area cultivated with sorghum and wheat in the Gezira Scheme increased by 81.2 and 129.7 per cent, respectively, while that cultivated with cotton and groundnuts fell by 32.9 and 35.9 per cent respectively (GAPS 2000:5, see MOCI 1998:122). Also worth noting is that the Gezira Scheme represents half of the irrigated area of the whole country. Back in the early 1930s, when sorghum entered into the rotation pattern in the Gezira Scheme, tenancies of 34.4 *feddans* allocated 4.4 *feddans* to this crop, while giving 10 *feddans* to cotton. Barnett and Abdelkarim (1991:8), who document these figures, observe that the increase of the tenancy size to 40 *feddans*, by 1933, resulted in the increase of the area allocated for sorghum to 5 *feddans*, while that of cotton remained the same. The authors note that wheat was introduced as a new crop beside groundnuts in the rotation in 1961 and that when cropping intensified in the 1974/75 season, the three crops of cotton, wheat, and groundnuts were allocated

10 *feddans* each in the four-fold rotation areas in the Gezira Main. In the three-fold rotation areas, mainly in the Managil Extension, cotton acquired 5 *feddans*, with a similar area to groundnuts and sorghum (Barnett and Abdelkarim 1991:8).

Accompanying this crop allocation policy in the irrigated sector was the expansion in cultivated area under rainfed mechanised and traditional farming. In the mechanised rainfed sector the area for sorghum almost doubled, standing at 96.8 per cent for the interval noted above (see Table 5.3). Yet, with all these increases, food security was not attained for two main reasons. First, with the exception of wheat which witnessed an increase in production and productivity, all other crops showed either low productivity in conjunction with increases in production (*dura*) or a decrease in both production and productivity (*dukhun*). Second, the traditional rainfed sector almost collapsed, with both area cultivated and productivity badly deteriorating (Suliman 2000:126, details in Chapter 5). Apparently the contribution of rural subsistence economies had fallen dramatically or in some areas reached a halt (Chapter 5). Certainly, displacement led to a decrease in relative size of cultivable area and livestock production (see Al-Mahal and Omer 1992:45), and of course this was added to the demand of the towns' staple food, i.e., wheat or a mixture of wheat flour with that of sorghum. The paradox now is that in the Sudan there are relatively more food consumers than previously food producers – its simplest representation being the rapid urbanisation we detailed in Chapter 7. The latter, especially as it is taking place in the downstream RZ, is indicative of a loss of rainwater.

Wheat and sorghum came to occupy a larger part of the Gezira Scheme, the erstwhile empire of Sudan's cotton. However, increases in the area of wheat and sorghum should not be viewed as their merely taking over plots earmarked for cotton and groundnuts. This was probably true for some time, yet the irrigated area at large (as we shall see below) has increased dramatically, and wheat and sorghum acquired higher proportions. The end of the second interval pointed to above (i.e. between 1984/85 and 1993/94) saw the reinforcement of the NCS originally adopted in 1992.

Associated with the NCS, the food security discourse peaked in the 1990s, being part of a wide mobilisation campaign to meet pressing needs and to gather support for an authoritarian regime that was rare in its diving against the current of globally espoused democratisation. The leaders of the military coup, which was inspired and backed by the NIF, had to respond swiftly, though largely rhetorically, to the looming food crisis. The NIF officers raised the slogan "*na'kul min ma nazrá u nalbas min ma nasná*" ("we shall eat from what we cultivate and we shall clothe ourselves from what we fabricate") (El Zain 2006a). This became an important maxim, and though it was not fully translated into action it did correctly capture the worries about food insecurity and therefore appealed to the zones of hunger surrounding the big cities, particularly the tripartite capital of Khartoum. It is important to emphasise that the NIF officers were keenly aware of

the need for swift action concerning food shortage/famine, so that their fragile regime could survive what had led to the collapse of the previous military dictatorship of the May regime. Hamid (1996:130), along with Khogali (1991) and Cutler (1991), notes that the failure of the May regime 'to deal expeditiously and effectively with the 1983-1985 disaster contributed to its downfall in April 1985'.

Food security for the NIF officers then rose as a vital agenda point. Associated with it, the first NIF cabinet established a separate Ministry for Relief and Displaced Affairs (Hamid 1996:132). Later this ministry was renamed the Ministry for Humanitarian Affairs, under which title it functions till this date (see Global IDP 2003). 'The 1992-2002 National Comprehensive Strategy (NCS) of Sudan, among its *main goals*, called for *food security* through horizontal and vertical expansion of crop production – particularly sorghum, millet, wheat, and livestock' (HCENR 2003:40, italics added). Due to increased pressure and as part of the NCS, in the eighth year after this strategy was launched, i.e. in September 2000, 'the government established the Strategic Commodity Reserve Authority (SCRA) in response to food shortages in parts of the country following prolonged drought conditions' (FAO/WFP 2000). The SCRA was assigned the task of 'market stabilisation, mainly for staple cereals, through imports and local purchases and free and/or subsidised distribution of food to vulnerable groups in emergency situations' (FAO/WFP 2000).

Population pressures certainly became more apparent in the tripartite capital, which as we shall see in section 8.5, expanded its irrigated agriculture dramatically. Khartoum, where popular uprisings contributed to toppling the two previous military regimes, swelled with slums of destitute IDPs and numbers of urban poor continue to increase rapidly (see Ahmed and El-Batthani 1995:205). In the early 1990s, the urban poverty rate reached 87 per cent (CSS 1998:358). Many of the risks that Khartoum now faces reside in the enormity of its population, described in Chapter 6.

As detailed in Chapter 7, Khartoum is not the only case of sprawling towns along the riverbanks in the now entrenched wheat/irrigated sorghum zone. 'Figures from the 1983 census show that the largest cities are located either within or near large agricultural projects or regions with good resource potential' (Herbert and Ibrahim 1991:219). Rapid increase of urban population in the downstream RZ would certainly mean a larger demand for Nile water. It is under this condition of rapid urbanisation in the downstream RZ that the Sudanese felt the need for more Nile waters for agricultural expansion and for achieving food security.

Population concentration or growth of towns has always necessitated measures to cater for food needs. Referring to the British era, Mohamed Salih (1999:58) states, '*Small producers* were incorporated into the market economy, producing cash crops such as cotton, sesame, groundnuts and gum Arabic for the international market, and *food for the emerging towns* and administrative centres' (italics added, see Ahmed and El-Batthani 1995:195). Being host to the highest

number of IDPs in the world, Sudan certainly faces a serious food insecurity situation. Thus, in the early 1990s, the Sudanese put their demand for Nile water at 24.5 km<sup>3</sup> (Owda 1999:58), only to boost it, a couple of years later, to double what is now their legal share of water from the Nile. In 1997, Sudan put its need for Nile water to meet food security at 32 billion m<sup>3</sup> (Waterbury 2002:186, Woube 1995:20, Haj Hamad 1999:9). It is worth emphasising that this figure excludes any water needed to produce an exportable surplus (Waterbury 2002:186). In fact, to meet its real agricultural export potential, the Sudan's need for Nile water is insatiable. The Sudan, according to Waterbury (2002:129) 'could unquestionably double its acreage on a cost-effective basis, but might thereby add 25 [billion m<sup>3</sup>] or more to its current water needs.' In other words, the Sudan might go to an amount of water of 43.5 billion m<sup>3</sup> or more.

*Water supply-augmenting strategy for watering more lands for grains*

Since the mid-1980s, the Sudan has been planning water development schemes in order to support increased food production (Swain 2002:297-8). To respond to the challenges of the 1990s, the Sudanese government resorted to aggressive water supply-augmenting infrastructure, viewed as a critical component of national security. Construction of dams and large canals, as we shall see below, is considered to bolster national independence and sovereignty by supporting progress towards the goal "we eat what we cultivate". Apart from a few water conservation measures, such as the long-time policy of paying for irrigation water, undertaking irrigation management transfer (IMT),<sup>6</sup> and, possibly, seeking efficient irrigation technology (Chapter 9), almost all government effort has gone into engineering nature to increase water supply. Indicating that the Sudan is still largely dwelling within the "first squeeze" imperative, supply-sided solutions have featured in the national strategy, which is designed to upgrade the existing water storage facilities, whose current capacity holds around 30 per cent of Sudan's share in the Nile waters (HCENR 2003). In line with this strategy, Roseires Dam is to be expanded from 3 to 7.2 billion m<sup>3</sup> (Elsheikh *et al.* 1999:258-9, HCENR 2003:6), giving it alone 45 per cent of Sudan's current share<sup>7</sup> (HCENR 2003:6). The heightening of the Roseires Dam was conceived of in 1978 and reconfirmed throughout the 1980s. Work finally started in 1994, financed by Sudan from its own meagre resources at about US \$400 million (Waterbury 2002:136).

6. Sudan is one among 25 countries in the world, which recently had undertaken irrigation management transfer (IMT), i.e. transferring control of surface irrigation systems to groups of farmers (Richards 2002:19). The government is quitting the agricultural sector to the private sector and farmers corporations, where its role will confine to the coordination and organisational matters (Al-Ray Al-Aam 05.11.2004b).

7. The heightening of the Roseires Dam is planned to be accomplished within 6 years and includes the elevation of 25-km-long earth embankment to 10 metres, elevation of one-km-long concrete embankment to 10 metres and the installation of new mechanical and electric parts such as doors, cranes and generation machines (MOCI 1998:130).

The government strategy has also involved building other dams such as El Satit and El Remila on the Atbara River and Merowe and Kajbar dams on the Main Nile (MOCI 1998:127). Earthen embankments were also set up on non-Nilotic rivers, such as the Gash and the Baraka. Also, the government plans to construct 20 dams divided equally between Kordofan and Darfur. Three and two of these dams have already been implemented in the two regions, respectively. In the River Nile State, work on Al-Awataib Dam has commenced (MOCI 1998:129-130). The strategy will benefit from the Sudan's currently unused 4.5 billion m<sup>3</sup> of its share of 18.5 billion m<sup>3</sup> of Nile waters, in addition to the water "lost" to evaporation in the Sudd region in southern Sudan (El Zain 2000:16).

The anticipated area for cultivation in the 1990s was huge by all standards, and the irrigated part of it is far beyond what the Sudan could irrigate with its legal share of Nile water, especially if we consider its level of irrigation management and technology. Abdalla and Nour (2001:45) note that, as set out in the NCS (1994/95-2001/02), 'the area for grains will increase by 15 million feddans, i.e., 78% more than the area grown in 1992-93'. The NCS anticipates tripling the irrigated area, increasing the rainfed cultivated area 10-fold, increasing grains production six-fold and oil seeds five-fold (Al Bander 2000:22). By the 1993/94 season the area planted to grains and oil seeds had already doubled from its size in 1989/90 (MOCI 1998:122). As could be seen in Table 8.3, sorghum featured first in all agricultural sub-sectors accompanied by wheat in the irrigated zone. Table 8.3 also suggests that in 1994 the area under irrigation was conceived to increase by 132 per cent in the 2001/02 season, while that of traditional and mechanised rainfed farming was planned to increase by 11 and 59 per cent, respectively. The 3.78 million hectares of irrigated crops (Table 8.3) will need at the minimum 36.7 billion m<sup>3</sup> – double the Sudan's current share in the Nile water. The figure of 36.7 billion m<sup>3</sup> was calculated by multiplying irrigated area by taking the lowest average water delivery to command area of state-run schemes, as reported by FAO. The lowest average is 9,700 m<sup>3</sup> the highest was 12,600 m<sup>3</sup> per hectare. This figure is truly conservative if we compare it to the actual water used in 1990, which was 14,000 m<sup>3</sup> per hectare (FAO 1997a).

*Table 8.3: Increase in cultivated area by sector and type of crops (1994/95-2001/02)*

Farming sub-sector	Area (million ha)		Main crops	% increase*
	1994/95	2001/02		
Irrigated	1.63	3.78	Sorghum, wheat, cotton, sunflower groundnuts, vegetables, fruit trees, alfalfa, forage sorghum	131.90
Traditional	8.21	9.12	Sorghum, millet sesame, groundnuts, water melon, roselle, cowpea	11.08
Mechanised	7.93	12.60	Sorghum, sesame, cotton, sugar	58.89

Source: Ministry of Agriculture and Forestry, NCS in Mahgoub Zaroug (2002); \* calculated by the author.

However, a figure of less land for irrigation is mentioned elsewhere. There are plans, according to FAO, 'to increase irrigation to about 2.8 million hectares by the year 2000, almost all to be irrigated by Nile water' (FAO 1997a). Even though this area is significantly less than the above NCS figures it still needs more than 27 billion m<sup>3</sup> of water, much more than Sudan's share. The most recent report shows that the area under irrigation has increased dramatically – 'areas irrigated from the Nile and its tributaries, flush-irrigated areas, and irrigated from bore-wells [are] estimated at 4.89 million [*feddans*]' (HCENR 2003:11). It is also reported that in this year the area under irrigation will reach 6 million *feddans* (*Al-Ray Al-Aam* 05 November 2004a). The minimum amount of water needed to irrigate this 4.89 million *feddans* (2.05 million hectares) is 19.9 billion m<sup>3</sup>; the maximum could reach 26 billion m<sup>3</sup> or even exceed 28 billion m<sup>3</sup> given the above average water delivery for irrigation. Taking the minimum water delivery per *feddans*, this means that the Sudan already consumes its entire 1959 agreed water share of 18.5 billion m<sup>3</sup>, given that in 1993, water from the Nile and its tributaries irrigated 93 per cent of all irrigated agriculture (AllRefer 1991). The remaining 1.4 billion m<sup>3</sup> was from non-Nilotic sources, namely in flush-irrigated areas, and areas irrigated from bore-wells.

Flush irrigation included areas in the vicinity of the Gash and Baraka rivers. A Ministry of Culture and Information (MOCI) (1998:129) report points out that 'embankments have been set up on Al-Gash River for cultivating 180,000 *feddans*' (see Elsheikh *et al.* 1999:261). Although bore-wells irrigated area is not specified, the NRZ regions of Kordofan and Darfur featured in the report as having irrigated areas of 30,000 and 20,000 *feddans*, respectively. Irrigation in these two regions, largely from non-Nilotic sources, was made available possibly by trapping the waters of seasonal streams, as harvesting this water had been part of the government strategy (see MOCI 1998:127).

The anticipated planning, driven by food security, was followed by some action on the ground. The 1990s period witnessed the launching of the Great Kenana Canal, which should irrigate an agricultural project, and the conception of the second phase of the Rahad project (El Zain 2000), including the construction of a canal to feed this project. The complete implementation of the two projects, in which 1 million and 500,000 *feddans*, respectively, were to be cultivated *for realising food security* as well as for increasing revenue from exports, depends on the raising of the Roseires Dam (Elsheikh *et al.* 1999:259, MOCI 1998:131). Work on the two canals, which were planned to feed the two projects, stopped (HAB 1995), however, due to economic hardship and the meagre international assistance the government receives, which also rendered the dam heightening process very slow (HCENR 2003). According to the government, the two canals, which were 'due to have been completed in 1997, would have guaranteed the country's *food security irrespective of climatic changes and drought*' (HAB 1995, italics added). Lack of funds was thus one major hurdle in the way of the expansion of the anticipated irrigated agriculture. Funding problems should

slowly ease with the involvement of national and international private investors. Associated with this, two shifts may be observed. Firstly, the government thinking had shifted from pursuing development largely through large-scale public works to emphasise small- and medium-scale projects. Secondly, the shift in allocation of Arab investment in the agricultural sector has become evident – a shift from focusing primarily on rain-fed mechanised farming to irrigated agriculture. These two shifts have revolutionised irrigated agriculture.

Efforts at development with meagre local funds, however, has continued, putting 846,000 *feddans* under irrigation – an increase from an acreage of 2.29 million *feddans* in the 1988/89 season to 3.13 million *feddans* in the 1991/92 season, a 37 per cent increase (Elsheikh *et al.* 1999:260-1). Certainly, this is no mean achievement within three years' time. However, the most important thing to note is that this area was basically allocated for *small-* and *medium-sized* irrigation schemes, with the involvement of the *private sector*<sup>8</sup> (Elsheikh *et al.* 1999:261). There were 53 of these small- and medium-sized irrigation schemes launched along the Nile and its tributaries. Elsheikh *et al.* (1999:260) state that an area amounting to 100,000 *feddans* was allocated for such schemes. A report by the Ministry of Culture and Information (1998:129) shows 14 such schemes had been implemented, all along the banks of the Main Nile, save one, i.e. the Graduate Scheme at Al-Ailafoon, on the eastern bank of the Blue Nile. Their areas ranged between 2,000 and 20,000 *feddans* and totalled 114,000<sup>9</sup> *feddans*. Among these schemes were those clearly identified as food security schemes, such as the "Atbara Food Security Scheme" with an area of 8,000 *feddans* and the "Wadi Halfa food security project" with an area of 3,000 *feddans* (MOCI 1998:129). In addition, an area of about 450,000 *feddans* was considered for 39 locations (Elsheikh *et al.* 1999:260). Of these 39 projects, 28 are along the Nile and its tributaries in the downstream RZ states of Khartoum, Sennar, River Nile, Gezira, Northern, and White Nile. The remaining projects are for the NRZ states of Greater Kordofan, Greater Darfur, and Gedarif. Table 8.4 shows allocations of small- and medium-sized irrigation projects in each state.

In addition to the above, studies have been completed for 51 projects in different states, mostly for private-sector ventures, with an area totalling 700,000 *feddans* (Elsheikh *et al.* 1999:261). Besides enacting laws encouraging involvement of the national private sector, 'Sudan had introduced new investment laws which aim at encouraging foreign investments and protecting foreign investors' (*Sudan Tribune* 18 April 2004). From the above, it is clear that the irrigated area has increased dramatically.

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8. It has been reported that about 93 per cent of the irrigated area in 1991 was in government projects, while the remaining 7 per cent belonged to private sector (AllRefer 1991).
  9. The area of one scheme, i.e. the Graduate Scheme at Al-Ailafoon, is not specified, therefore, not included in the total figure of the area of the projects.

Table 8.4: Small- and medium-sized irrigation projects by state

State(a)	Location	No. of projects(a)
Khartoum	RZ	4
Sennar	RZ	9
River Nile	RZ	4
Gezira	RZ	4
G.Kordofan	NRZ	3
G. Darfur	NRZ	7
Gedarif	NRZ	1
Northern	RZ	3
White Nile	RZ	3
Total	RZ+NRZ	39

Source: (a) From Elsheikh et al. (1999: 260-1).

Interestingly, agricultural development is increasingly connected to issues of peace and development (*Al-Ray Al-Aam* 05 November 2004b). Very recently, the development of the “front-line” areas of southern Darfur and north Bahr El-Ghazal attracted attention. The minister of irrigation discussed with the leaders of the National Congress Party and native administration of these areas preparations concerning the development of water resources and projects of drought control, the widening of the drainage passage of the Bahr Al-Arab River, and the drilling of boreholes (*Al-Sahafa* Archive No.2, see *Al-Ray Al-Aam* 05 November 2004a). The minister asserted that attention was needed for these front-line areas because of their large agricultural and livestock resources, which contributed to the national economy (*Al-Sahafa* Archive No.2).

Added to the above is the expansion of modern large-scale schemes associated with the large dams of Merowe and Kajbar. The Merowe Dam, which would impound 12 billion m<sup>3</sup> (Waterbury 2002:137), is a multi-purpose hydropower project (EMDPIC/MOEM 1998) for expanding irrigated area that caters for the resettlement of dislocated groups (details below). It is also part of the network slated to contribute electricity to Arab countries. Besides raising Roseires Dam and construction of Merowe Dam, seven other projects, worth about US \$2 billion, have been studied and are ready for financing; all with a pronounced hydropower component, while official announcements have been circumspect in mentioning the irrigation component (Waterbury 2002:136).

Funding shortages seem to have eased a bit for large-scale waterworks, with contributions from Arab funds reaching up to US \$780 million and China investing, up to now, US \$200 million (*AFRICANEWS* January 2002), though this will go mainly to hydropower dams. According to Ali Askouri (2004b:57), the Merowe Dam funds of US \$1.5 billion are to be provided by Middle Eastern financial institutions, China, and Sudan. China also finances 75 per cent of the Kajbar Dam project, approximately US \$200 million, with the remaining funds provided by Sudan (*Sudan Tribune* 17 July 2004). Sudan has normalised its rela-

tions with the Arab Fund, as with the Kuwaiti and Saudi funds, while other funds are on their way to normalise relations with the Sudan (*Al-Ayaam* 24 March 2001). What we should emphasise here is the major shift from Arab investment in rainfed to irrigated agriculture, which revolutionised the latter so dramatically.

Arab countries, where the food gap was valued at \$16 billion in 2002 (*Sudan Tribune* 18 April 2004), showed increasing interest in investing in agriculture recently with the goal of using Sudan's potentials for 'bridging [the] food gap in the Arab world and to feed vast segments of [the] world's population' (*Sudan Tribune* 18 April 2004). Investment in agriculture is therefore one target of the Arab investors. Of the total cost of US \$30 million considered necessary for rehabilitating the four irrigation schemes of Gezira, Managil, Suki, and Rahad, following a comprehensive study conducted in 2001, OPEC provided a US \$23 million loan (MOF 2001:19).

Recently, the UAE government's Abu Dhabi Investment Fund approved Dh 552 million (US \$150.3 million<sup>10</sup>) to construct Sudan's largest dam, the Merowe Dam (*Sudan Tribune* 12 January 2004). More recently, a US \$50 million loan agreement was signed between the Kuwait Fund for Arab Economic Development (KFAED) and the Sudan to finance the additional Merowe Dam-related projects (*Sudan Tribune* 27 May 2004). In the same year, a deal was signed by the Ministry of Irrigation (Merowe Dam Implementation Unit) and the Saudi Development Fund to finance Saudi exports to Sudan valued at US \$50 million to be used for resettling the communities affected by the Merowe Dam (*Al-Sahafa* 23 June 2004). Sudan also encouraged Arab investors, offering them to 'wholly own investment projects in any parts of Sudan. Foreign investors are accorded special prerogatives that include 10-year exemption from profit tax, customs tax and export tax' (*Sudan Tribune* 18 April 2004).

The agricultural potential, the oil extraction, and the prospect of peace represent strong emergent qualities in the economy of the Sudan. They have provoked "herd behaviour" among investors, which are likely to pour large amounts of capital into the country. In the last few years, foreign investment in the Sudan reached US \$43 billion, mainly in the oil and gas sector, involving investment capital from Malaysia, China, India, and Japan besides that from Arab countries (*Sudan Tribune* 04 September 2004). The relative share of individual Arab countries is very significant, with the UAE leading with US \$8 billion and Saudi Arabia coming next at US \$6 billion (*Sudan Tribune* 04 September 2004). The Arabs' involvement in investment in the Sudan is likely to increase rapidly and for more strategic relations. The important thing to note is that capital from UAE is mainly injected into the energy and agriculture sectors as well as property and real estate, while that from Saudi Arabia went mainly to industrial and agricultural projects (*Sudan Tribune* 04 September 2004). The Arab Fund, for instance, aspires to contribute, in the future, to strategic projects such as those related to ir-

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10. Conversion rate for 27 May 2004.

rigation, electricity, and social services (treatment of poverty in all its aspects) (*Al-Ayaam* 24 March 2001).

Thus, in the last couple of years, expansion of irrigated area started to pick up and has maintained persistent expansion. In fact, unlike in the 1960s and 1970s, when the fervour for irrigation came in rather distant intervals, expansion in irrigated agriculture from the 1990s up to today has been steady, despite all possible difficulties. Northern state, in particular, is witnessing increasing interest in expanding irrigated area with the support of the state government. In 1998 the Northern state's Ministry of Agriculture financed a number of projects with an area of 4,000 *feddans*, and the so-called Programme for Resettling Wheat Farmers in this state started in 1999, with cultivation of 160,000 *feddan* to be ultimately increased to 400,000 *feddans* by 2001 (Salih 1999:15-17). Northern state also 'aims at increasing the area cultivated in wheat to 800,000 *feddans* in the long run. The objective of that increase is *to satisfy 50% of the national need of wheat*' (Salih 1999:16, italics added).

Sudan's dependence on irrigated sorghum for food has certainly increased dramatically from an insignificant portion in the 1960s to reach 20 per cent now (HCENR 2003:11). In other words, whereas in the past sorghum for food was almost all produced in the rainfed sector, now one-fifth of food needs from this crop comes from the irrigated sector. It is important to note, however, that sorghum, both irrigated and rainfed, represents at least three-quarters of the total cereals consumed in the Sudan. In fact, for the 10 seasons between 1984/85 and 1992/93 the average total production of sorghum was 2.65 million tons (Table 5.3), compared to 243,000 tons for millet (Table 5.4) and 372,000 tons for wheat (Table 5.6). This means, among the three main sources of staple food, sorghum alone contributes over 81 per cent.

Certainly, wheat and sorghum will be in greater demand while millet and similar crops are largely undermined. Apart from the impact of integrating local economies into the market and the impact of droughts and soil erosion, the undermining of these crops also operates through taste. In Sudan, obviously, one can speak of ethnic foods and prejudices towards certain types of food. Most important in this regard is which ethnic groups first settled in towns and established the food-processing industry therein and who owns the associated capital. Certainly, some crops were dropped in this food-processing process and their original clients shifted to new foods – adapting to new food habits, influenced by their being hosted in a different crop zone, but more importantly by the dominant group's taste. One example in connection with prejudices towards certain types of food is fish consumption.

In Khartoum *Lates* ('*ijl*) fish is promoted while *Hydrocyon* (*kās*) fish is devalued not due to its nutritional value but because of the influence of the British – the dominant tastes acquired in the town during the Condominium rule<sup>11</sup> (for details see Babiker 1981:164-5).

The contrast between the less nutritious *ijl* and the more nutritious *kās* is similar to that between sorghum and millet, both in terms of nutrition and social value. Mixed with the "urbanite" culture of townsmen and its mass food processing, this greatly displaced the food of the country. Millet, for instance, is considered unhandy for making *kisra* (pancake-like flat bread) and certainly not good for making town bread, while it is considered best for rural people to make *aseeda* (porridge) and their kinds of bread. Millet is tasty and easy to pick for a variety of small birds, which depresses its yield, making it doubly devalued. First, traditional farmers – its own producers – abandoned it for sorghum, as noted in Chapter 4 and secondly town residents consume more sorghum than millet. A degree of food "discrimination" certainly exists among the diverse Sudanese communities or regions. Wheat also belongs to a hegemonic culture, it being the staple food of the hegemonic group that reshaped towns and influenced their taste. In fact, the expansion of wheat production stands as the clearest indicator of the dominance of the riverain elite, and this is precisely what necessitates more water for irrigation. Dominance of Khartoum State, as representative of the wheat "culture" and as one witnessing expansion in irrigation (we shall detail this later) would mean that more Nile water will be secured to this state, particularly to the tripartite capital, Khartoum.

The early 1970s started to witness the presence of larger numbers of "rainfed grain producers" inside the irrigated areas, who under normal circumstances should have remained in the rain-fed millet zone, tilled, harvested, and consumed this crop and until recently exported it to downstream RZ towns. They now abandoned that activity and with it the consumption of millet, turning into sorghum and wheat consumers. Certainly there is difference between O'Brien's earners of sorghum sacks, who were largely single adult workers, and these families in the midst of plenty of water.

Future dependence on irrigated sorghum is certainly going to increase, as mechanised farming is deteriorating and the traditional sector crumbling. Yet rainfed sorghum and millet production are projected to decline towards the 2030s and to worsen towards the 2060s (HCENR 2003:45) and, among the two crops, 'sorghum was found to be the one most adversely impacted' (HCENR 2003:82). It has been suggested that 'in 2030 and 2060, the humid agro climatic zones shift southward, rendering areas of the North increasingly unsuitable for agriculture. Crop production is predicted to decline by between 15% and 62% for millet and between 29% and 71% for sorghum' (HCENR 2003:61). By this period consumers of these crops will have grown to enormous size – to become the largest segment of the population, which may reach 80 million.

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11. Trilsbach (1991:64), along with Babiker, states that 'ijl (Nile perch; *Lates spp.*) is less nutritious than its promotion implies and he relates this to European prejudices in Condominium times; *kas* (tigerfish; *Hydrocyon spp.*) is the most nutritious fish, but it is only the fourth most popular in terms of consumption, whilst a variety of catfish have enormous potential as a source of protein if taboos affecting their consumption (based on appearance) can be overcome.' (Also see Babiker 1981:165).

Besides its increase to meet grains demand, the area under irrigation will expand further due to the country's desire to increase sugar production from 700,000 tonnes to 1 million tonnes to meet domestic demand and that of some investors. Projects for attaining the 300,000 tonne increase are planned near existing infrastructure on the eastern bank of the White Nile, with capital for the expansion, US \$325 million, co-financed by Kuwaiti investors (*AFRICANEWS* January 2002). Recently, the White Nile Sugar Scheme was initiated with 165,000 *feddans* for the production of 240,000 tonnes of sugar and 40,000 tonnes of other cash crops (*Al-Sahafa* 03 September 2004, also *Al-Sahafa* Archive No.1). The Arab Fund has agreed to extend a loan of US \$65 million to the White Nile Sugar Project (*Sudan Tribune* 26 September 2004). Additionally, the Blue Nile Sugar Scheme was planned to start in 2004 with an area of 80,000 *feddans*, in the vicinity of Suki (*Al-Sahafa* 24 July 2004). In addition, the prospect for funding and implementing the Setit Scheme is gathering momentum with funds likely to be allocated from the Arab sources. This scheme, thought capable of providing a reserve for sugar in the Arab world, occupies an area of 500,000 *feddans* and with its dam will cost US \$250 million (*Al-Sahafa* 29 December 2004).

Besides food security, increases in demand for water are also associated with recent campaigns to expand the area under cotton in the major irrigation schemes (FAO 2002a). The reduction in the area cultivated under cotton, pointed out previously, 'came to conform with the government's policy aiming at expanding food crops area at the irrigated areas. But according to the National Comprehensive Strategy's 10-years plan, there is due concern with the expansion of cotton cultivation horizontally and vertically' (MOCI 1998:120). In fact, since 1995 the need to balance the cultivation of export and food crops has been echoed, including expansion of cotton cultivation, especially in rainfed sector (MOCI 1998:123). In the Gezira Scheme alone, of 1 million *feddans* planned for cultivation in the 2005/06 season, 350,000 *feddans* will be allocated for cotton, the rest of the area, 300,000 *feddans* and 420,000 *feddans* will be allocated for wheat and sorghum, respectively (*Al-Sahafa* 12 July 2004). This prospective expansion is facilitated by US \$60 million provided by Bahrain's Arab Investment Corporation, which helped overcome financial problems faced by the Gezira Scheme (*Al-Sahafa* 12 July 2004).

One more cause of the increase in irrigated area is probably the "redeployment", in the downstream RZ, of the capital invested by the *jellaba* (northern Sudanese investors) in rainfed agriculture in southern Sudan and the Nuba Mountains. Both the agreements between the government and SPLA/Nuba Mountains sector (Ibrahim 2002:183) and those that followed emphasised a reconsideration of the way land is given to investors. In the recent agreement between government of Sudan and the SPLM on "wealth-sharing during the pre-interim and interim period", signed in Naivasha, Kenya, on 7 January 2004, land is referred to in article 2.0 on "ownership of land and natural resources". The agreement is not intended to address the ownership of land and subterranean natural resources;

however, the parties agreed to institute a process 'to progressively develop and amend the relevant laws to incorporate customary laws and practices, local heritage and international trends and practices' (GOS/SPLM 2004). A national land commission is to be established to arbitrate between willing contending parties on claims over land and to sort out such claims. With its decisions binding to arbitrating parties, the commission will abide by what has been persistently violated for decades – it 'shall apply the law applicable in the locality where the land is situated or such other law as the Parties to the arbitration agree, including principles of equity'. The principles of equity would certainly disallow the large-scale looting that the state and state-backed groups have entertained for decades. Importantly, this looting is now being checked, with the land commission being 'representative and independent' and its composition, membership, and terms of appointment 'set by the legislation constituting it' with its chairperson to be appointed by the presidency. Also in accordance with this agreement, a southern Sudan land commission is to be established with similar functions and responsibilities as the national one, though at the level of southern Sudan. Its chairperson is to be appointed by the President of the Government of Southern Sudan (GOS/SPLM 2004).

Being the cause of the strife, it is likely that at least some schemes, especially those in the Nuba Mountains, will be taken from the *jellaba* and returned to their historic owners, if no complete expulsion of the *jellaba* takes place (see Al-Karsani 2000:47). The well-entrenched agricultural investors (see Suliman 2000), i.e. the *jellaba* of the downstream RZ, will then seek other opportunities for investment in agriculture. Since all parts of northern Sudan are now risky to invest in except the downstream RZ, the latter will certainly be an option.

Yet further causes for increases in irrigated area are the necessity to rehabilitate the upstream RZ and to meet the demand of its rapidly growing urban population, environmental protection, and job creation for a large number of agriculturalists. Like in Egypt, where the use of Nile water for job creation to overcome social problems, including terrorism, is emphasised (for details see Adriansen 2003) so is the official discourse of Sudan. Currently there are 27,000 unemployed agricultural engineers and 26 agricultural faculties, which graduate around 3,000 agriculturalists annually (*Al-Ray Al-Aam* 05 November 2004a). The Ministry of Agriculture has adopted a plan for employing, in both the private and public sectors, all graduates of agricultural faculties within the coming five years (*Al-Ray Al-Aam* 05 November 2004a). Especially if a peaceful settlement is reached and sustained with rebels in the south and in the west, the agricultural sector will be a crucial employer of large numbers of the demobilised soldiers and militias, who may, otherwise, threaten to disturb peace and stability.

Environmental protection in the form of reforestation, against an almost total environmental collapse in large parts of the downstream RZ as well as in the upstream RZ, is becoming an urgent agenda item as is the increase in Sudan's demand for water for irrigation. The National Comprehensive Strategy calls for

the allocation of 5 per cent of the irrigated area for woodlots (HCENR 2003:75). Reforestation is considered crucial for protecting irrigated projects such as the “mammoth project” of New Merowe, where sands buried 147 of 280 *hawashas* (fields) (*Al-Ray Al-Aam* 05 November 2004c).

Besides meeting food needs, and in fact, related to these very needs, Nile water is in high demand for meeting domestic water needs. Displacement/settlement of rural communities in urban areas means increased water consumption for families immigrating from the NRZ, especially if the new migrants match the lifestyles in their downstream RZ settlements. Average family consumption in the NRZ district of East Kordofan, observed in 1981, was 9 gallons per day while in rural Khartoum Province family consumption ranged between 20 and 66 gallons per day (Shepherd and El Neima 1981:17).

The evolution of urbanisation in the Sudan informed not only the amounts of water consumed in urban areas, but also the sources of water supply to these areas. The expansion of Khartoum in the 1920s resulted in the construction of a series of treatment plants based on perennial Nile water. As the growth of the city rendered supply from these plants insufficient the authorities resorted to groundwater to augment the urban water supply (Elsammani *et al.* 1989:261). Recently, the Khartoum Water Corporation ‘achieved considerable success in increasing the supply of water to the Khartoum area. Since May 1982 supplies have increased from 110,000 m<sup>3</sup> per day to 260,000 m<sup>3</sup> per day’ (El sammani *et al.* 1989:262).

Population concentration, however, has another impact which affects the water in demand. Especially in cities and towns along the banks of the Nile, pollution means bad quality of water flowing downstream. In the late 1980s, when population concentration was intensifying, the municipal sewerage system of Khartoum was at its worst condition. ‘The municipal sewerage system served only 5 per cent of Khartoum urban area. Even that system was susceptible to breakdowns during which waste was discharged either directly into the *river* or onto open land. For most people in the low-income areas, there was no system of sewage disposal’ (UN-Habitat 2003:24, italics added). Most of the new squatter areas do not have pit latrines (El Sammani *et al.* 1989:262) and these settlements are sprawling rapidly in the vicinity of the Nile. Thus, increased urbanisation, as portrayed in Chapter 7, with increasing poverty rates is a recipe for hydrocide.

Underlying all of these causes for increased demand for water is the Sudan’s need to resolve its own urgent food shortages, to realize its economic potential, and to abide, among others, with the moral responsibility of producing more food for a world increasingly feeling the pressure of food shortages. According to Waterbury (2002:130), the Sudan may become a major net exporter of a range of agricultural commodities, such as coarse grains, medium- and long-staple cotton, oil seeds, cane sugar, cattle, sheep, and hides. Sudan may become so, in his view, if a secular increase in world prices could occur for such commodities, driven by rising incomes in giants like China, India, and Indonesia. In the light of this, he

notes, the Sudan's effective demand for Nile water will, at least, almost certainly double; otherwise, its current economic collapse will continue.

### 8.5 Will current population redistribution trends be sustained?

The question now is whether the new RZ population contours, which have largely influenced the increase in water demand, will maintain their growth pattern, stabilise, or reverse. Will the IDPs permanently remain in the downstream RZ? Are more NRZ IDPs expected to move into the RZ? We shall first probe these two questions and then move to population projections in order to examine how the population contours in the RZ will look in the future.

John Markakis (1998), who wrote more than a decade following the mass displacement, notes that 'Many of those who made the trek from the far west to escape starvation never returned to their homeland, finding refuge in the sprawling slums that mushroomed around Sudan's principal towns' (Markakis 1998:91). Referring to the people of the Nuba Mountains, Al-Karsani (2000:47) states, 'It is clear that most of the old migrants and the displaced changed into settlers in Greater Khartoum like most of the displaced from Western Sudan's drought-ridden areas' (see also Mohammed 2001b:1).

Generally speaking, there is consensus among scholars that the large majority of IDPs from northern Sudan will not return to their areas of origin, while the SPLA's emphasis on rehabilitation and resettlement in southern Sudan might imply that a segment of IDPs from this region might return. In our understanding, overall, most IDPs are likely to settle where they are now. Seven reasons support this. Firstly, the conditions that generated their vulnerability have actually not improved (Chapter 5). Insofar as deteriorating conditions persist in rural areas, push factors will add more immigrants and IDPs to towns, even if the latter provide no real alternative. Discussing the primacy of Khartoum, Abdel Rahman (1991:248) notes that migration flows will continue at an alarming rate, even if the city proves unable to provide employment opportunities. He continues to say, 'The failure to reform the agricultural structure of the country means that rural poverty is not being lessened. This situation together with the pressure of a growing rural population will force more and more potential migrants to move into the already crowded primate city' (Abdel Rahman 1991:248).

Civil wars and armed banditry as well as tribal clashes which all contributed to displacement are still raging in different regions of the country. Recently another rebellion broke out in Darfur, displacing around 1 million people to this day. The conflict that has raged for more than a year in Sudan's western Darfur region has now created what the United Nations branded as one of the world's worst humanitarian crises (*Sudan Tribune* 26 May 2004). In connection to security, even if a political solution could be reached in the form of establishing a separate administration that guarantees new arrangements for accessibility to resources, and even political participation, this may not encourage the IDPs to return. 'The establish-

ment of a separate state has not induced any of the interviewed to return or even to think of returning to the Nuba Mountains in the future' (Al-Karsani 2000:47).

Secondly, IDPs may not return to their areas of origin because of the collapse of the communal social care system and loss of assets of those who migrated, as these assets were likely utilised by those who stayed or by other IDPs who settled therein. The new users might have affected significant changes, complicating property rights issues (Bannaga 2001:50-1), especially if we consider the communal nature of land tenure in the larger part of rural Sudan. 'In addition to the pressure that displaced communities have placed on the resources of urban areas, their movements from traditional areas have led to the total negligence of what is left of resources there. These traditional areas are now out of production, not utilised and not conserved. Their development has been halted, and any attempt to start again is going to be demanding' (Ahmed 1993 :117-18).

Thirdly, some of the IDPs have already found their own ways of eking a living and settling in towns. A recent study shows that 54 per cent of the Nuba in Greater Khartoum do not depend on the government for their living and 66 per cent of the same sample either live on their own private plots or those of their immediate family and other relatives (Al-Karsani 2000:39). A new generation was born in towns and other recipient areas. This generation might be estranged in their parents' area of origin, aside from the fact that the parents themselves are bound to the new environment, for example, to sustain their children's education.

Fourthly, the original "pull-factors" persist, with development increasingly concentrated in the central RZ. Even for small- and medium-scale irrigated schemes, in the early 1990s, the central RZ received 20 of 39 irrigated schemes in all the country (Table 8.4). Other sectors in this region, such as urban development, are also booming, especially in Khartoum. One recent example is an initiative of one investor, the Al Salam Saudi Group, which 'is set to "develop a new city on the Nile at an estimated cost of \$1.5 billion, covering a site of more than 100 million square metres"' (*Khaleej Times* 26 May 2004). The group also presented innovative ideas for developing Khartoum in a modern fashion, involving the creation of residential, tourist, educational, and medical centres (*Khaleej Times* 26 May 2004).

Moreover, recently, the downstream RZ north of Khartoum began to witness significant development in terms of infrastructure (dams, roads, an oil refinery, etc.). This infrastructure will slowly create its own development momentum and certainly absorb a large amount of IDP labour, perhaps even attracting more settlers (detailed below). Similarly, the upstream RZ might make significant gains in rehabilitation, resettlement and infrastructure-building for economic development in general. Should an encouraging peace deal be reached and sustained between north and south, the majority of southern Sudanese might return to their areas of origin. A cease fire and the normalisation of the situation, during the interim period, in the view of Goldsmith *et al.* (2002:194), would facilitate the return of over 3 million IDPs from southern Sudan to their home areas. This

would certainly reduce the level of population concentration in the downstream RZ. However, it is to be noted that such voluntary relocation will still take place inside the RZ, yet in the upstream RZ.

Fifthly, and important in connection with our fourth factor above, is that IDPs return to areas of origin cannot be made compulsory. The peace agreement between the government and SPLA/Nuba Mountains sector clearly emphasises that the return of civilians should be voluntary (Ibrahim 2002:183). Moreover, if Sudan were to break into two or several independent entities there would be difficulties in defining who ethnically belongs to which region,<sup>12</sup> especially in Khartoum. Despite the fact that Sudanese ethnic groups are defined in relation to specific geographical areas, it is hard to connect all ethnic groups' members to such an area. Especially in the central RZ, the "melting pot" seems to have yielded significant changes in the course of the last century. Members of ethnic groups who believe they historically belong to the central RZ have now spread to different regions in the Sudan and with the passage of time some might have completely dis-linked with their kin in their homeland. They might have acquired "citizenship" of other tribes, as their kin at home conferred similar "citizenship" to other tribes' people. Thus, an eventual split of the Sudan into northern and southern states could not mean the total eviction of southerners from the north and the reverse.

Sixthly, the IDPs are unlikely to return because, under enduring pressure, the government has engaged in programmes to resettle them in the downstream RZ and, therefore, legalised their current status. They now have an incentive to stay, for they own plots of the most valuable lands in the country, in addition to serving political ends. In fact, some groups were encouraged to come and settle in the domicile of their political leaders. Politicians, according to El-Bushra and Hijazi (1991:257) 'encourage their followers to reside in Greater Khartoum in order to exert pressure on government to their advantage' The Umma-led government effectively engaged in resettling the rural displaced around Khartoum, not because of lack of another more suitable alternative, but mainly to gain constituencies for the party. The Umma Party has maintained its same old strategy.

Finally, there is no prospect for a "third Turkiyya". Effective depopulation of northern Sudan was carried out in two intervals, the first Turkiyya (Turkish rule 1820-85) and the second Turkiyya (Anglo-Egyptian rule 1898-1956) (Chapter 6). In the 1990s, at the zenith of tensions between Sudan and Egypt – the country from which troops of the two Turkiyyas had invaded, devastating and depopulating northern Sudan for more than a century between 1820 and 1922 – its threat

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12. Al Bander (2000:283) describing, such a situation, says in all areas of eastern Sudan there exists groups from all over the rest of the Sudan, including Ja'aliyyin, Rikabiyya, Arakiyyin, Nuba, Shilluk, Nuer, Fur who migrated and settled in this region long time ago. Al Bander description of population mix in Eastern Sudan, probably, applies to all other regions indiscriminately. In Darfur, there are Arabs who adopted a Fur or Zaghawa identity and Fur who adopted a Zaghawa identity and there are Zaghawa who became Fur (see Suliman 361), and the Dinka of Renk District cohabit Ta'aisha Arabs (Gore 1987b:96).

was confined to the taking over of the Halayib Triangle. No other nation is keen to reverse the new population trend for the time being; or, at least, would not be allowed to do it freely. In relation to this, the possibility of committing ethnic cleansing or genocide in the downstream RZ, such as that committed in Rwanda, is low, though several incidences at the peripheries, such as in the Nuba Mountains, in southern Sudan, and recently in Darfur, have been described as such. Several issues, including terrorism, and probably now the lucrative oil business, have put Sudan in the limelight, which might serve as an early warning system for any attempts at planning large-scale violence, ethnic cleansing, and genocide in the downstream RZ. Moreover, the current “balance of demographic powers”, so to speak, in central Sudan in general and in Khartoum in particular would discourage any party from risking the initiation of large-scale violence. In fact, without being too optimistic, chances are good now for constructing a new Sudan founded on the crisis-induced new population contours, essentially by overcoming the original causes behind the crisis.

### **8.5.1 Increasing infrastructure concentration: Water constructions in the downstream RZ**

The new population contours indicate that vast areas in drought-hit regions have either been deserted and left to the creeping desert or abandoned to the new impacts of armed banditry and civil war. This is a great loss of territory that should have lifted some of the burden from other territories in the country. The most significant manifestation of this is the disappearance of nomadism – ‘to cease the practice of transhumance would be tantamount to [surrendering] this vast area to the desert, for it has no other possible use’ (Tubiana and Tubiana, cited in Shaaeldin 1981:96). The most significant change in conjunction with water consumption is that the northern arid and semi-arid part of the Sudan (the downstream RZ), for which we have a comparatively better recorded history, had always been a population-sending zone, but now is receiving huge numbers of migrants and IDPs.

#### *Increasing demand for Nile water by the most powerful region in the Sudan*

The confluence of the two Niles being the seat of power of modern Sudan, with external interests keeping a close eye on it, has transformed the relationship between the desert-fringes and wetter zones to the south. It has created a mismatch between habitable environment and the size of the population seeking a habitat. The climatic zones that are conducive for peopling are southward while population is flowing northward to concentrate in the previously population-repelling arid and semi-arid zones, particularly in Khartoum state. We will later consider in more detail the large populations being attracted to Khartoum State and, therefore, its prospected Nile water consumption. This might generate conflict between Khartoum and its upstream.

This Khartoum phenomenon invoked an intelligent observation. Two Sudanese authors – though expressing a simple fact – alluded to a contrast between the “repelling climate” of Khartoum and the “affluence” this city came to generate for itself. Al-Assam and Khogali (1991:206) state that ‘this *semi-desert* capital gathered to itself administrative, commercial and later industrial activities. As a result it also became the prime centre of provision of educational, health and other social services’ (italics added). This paradox sums up Khartoum’s magnetic power – it pulls to its *arid domain* dwellers of the remotest *wetter ecological zones*. Suliman (2000:395) emphasises the same when he points out that hundreds of thousands of southern Sudanese from Dinka, Shilluk, Nuer, and other tribes were forced to leave their rich *savannah niches*, traversing hundreds of kilometres to settle in the *arid north*. Making things worse, Khartoum is inviting in more of the desert; strictly speaking, creating large-scale environmental degradation and causing desertification (Chapter 4), making its turning into a megacity even riskier.

If one contemplates the shift in population from the wetter zones, latitudinally lying to the south, to the semi-desert part of the RZ, namely the tripartite capital it certainly appears dramatic. The tripartite capital is relatively new on the map of Sudan, with Khartoum founded in the third decade of the nineteenth century, Omdurman in its ninth decade, and Khartoum North born in the early Condominium days (Davies and Abu Sin 1991:3). The capital increased its population from 13,000 in 1843 to 7.3 million in 2003. That is, in 160 years, Khartoum increased its population by about 540-fold. Yet its increase became even faster in recent years. Based on what he considered the unlikely assumption that the existing refugees in Khartoum would return to their areas of origin, El-Nur (1991:146) conducted a population projection using 1988 as base year. His conclusion was that Khartoum’s population will reach 2,317,223 by 2003. That figure, which was reached through careful calculation, compared to actual figures, demonstrates how dramatic Khartoum’s population is increasing recently. Khartoum tripled its large population size within just 15 years.

Projected population figures, as discussed in Chapter 6 and Chapter 7, suggest that the population of the central RZ (Central Region and Khartoum) will continue to increase in the decade ahead. The steep rise of population in the central RZ is attributed to the continuing flow of immigrants and IDPs on the one hand and to natural increases on the other. Large-scale migration to Greater Khartoum is now forecast to ‘continue unabated’ (Herbert and Ibrahim 1991:230). Population growth in Khartoum is also on course to defy growth projections. Khartoum State, which was projected to reach 7.6 million inhabitants in 2013, has in fact, already acquired about the same figure in its urban parts alone. In just the last decade, Khartoum doubled its population – from 3.6 million in 1993 (Dept of Statistics 1996) to 7.3 million in 2002 (Short 2002). Using the growth rate of 6.8 per cent for 1993 (Dept of Statistics 1996:161), would give Khartoum a population of 10.7 million by the end of this decade. Given the sustenance of the high growth

rate, by 2013 Khartoum state will exceed 12 million – over 4 million more than the projected population for that year. Considering such increase for Khartoum alone and adding to it the population of the Central Region, the projected population of the central RZ in 2013 will actually reach, at the minimum, 21 million. This is equivalent to the total population of northern Sudan in 1993, or about two and a half times the northern Sudan's population size in 1959 when Nile water agreement was signed.

Both the large numbers of IDPs and the higher fertility rates they effect make the increase in the population of Khartoum State, in particular, and that of the downstream RZ in general, higher than predicted. The fact that there is no prospect for the IDPs to return to their areas of origin means this increase will persist, at least, for the next two decades. Here it is worth noting that immigrants and IDPs contribute the larger proportion of the natural population increase. Referring to Khartoum, Abdel Rahman (1991:248) states, 'the transfer of more rural people with their normally high fertility trends will eventually add to the natural population growth in the city'. Population increases in areas of destination gain momentum because the migrants and IDPs who moved to Khartoum, according to Abdel Rahman (1991:248), are generally young, typically under 30, and they moved during their most fertile years. Their impact, in his view, is apparent in a 2.9 per cent per annum increase of the population of Khartoum in 1983, while the natural increase in Greater Khartoum, in 1973, was about 2.5 per cent per annum. Actually, in the short run, population increase in Khartoum would have been even faster than described above, had it not been for political and security measures, such as the state of emergency, which blocked or repelled some individuals and groups from staying in the capital.

The state of emergency probably put obstacles in the way of free movement of immigrants. Closely related to it, is the forced conscription to the army and *mujahideen* militias. Because thousands of young men from government and militia forces died in the south in recent years, the large majority of families devoted quite some effort to keep their children from exposure to recruiters, given that the government 'openly called for rearmament and armed forces of an incredible one million soldiers' (Albrecht 2000:131). For those who can afford it, sending children abroad to countries such as Syria, Egypt, and the Gulf States was the safest solution. In many cases the former targets of *kasha* have become the new targets of recruiters for fuelling the bloody civil war. Khartoum being under theocratic laws has actually undermined some trades, which had flourished in the past and attracted considerable numbers of workers. The majority of the middle class who were based in Khartoum fled the political and religious persecution and other forms of repression carried out by the Islamist government and sought asylum in neighbouring countries, Europe, and North America. In this respect, should Khartoum turn into a "secular" city it would resume its former activities and attract more people from inside the Sudan while also regaining some of its ex-inhabitants from outside the country.

It is to be noted here that population trends in connection with Khartoum do not represent, in their magnitude, the larger scene in the Sudan. However, they certainly show the general pattern of population redistribution. Importantly, however, the proportion of the country's total population that Khartoum acquires prompts us to consider whether this proportion alone, in connection to water scarcity, is enough reason to cause worry. The manner in which Khartoum has conducted the affairs of the wider landscape it presides over has led it to acquire between 15 per cent (Al-Assam and Khogali 1991:206) and 20 per cent (Bromely 1991:240) of the population of this landscape, 31 per cent of its total urban population (Davies 1991:132, Hassan 1995:132). Worth emphasis here is that more than half of the urban population in northern Sudan lives concentrated in Khartoum State (Ahmed and El-Battahani 1995:199). These huge numbers certainly need food to eat as well as other amenities for which water is used.

Developments in the surroundings of Khartoum have already expressed the response to the large population size of this city. Khartoum, in terms of agriculture, as its governor claims, is now ahead even of the irrigated Gezira State (*Al-Sahafa* 16 April 2001). Khartoum produces in its surroundings vegetables, fruits, and animal products and fodder (Mohamed 1991:107), where, as expected, the size of both irrigated areas for vegetables and for fodder is expanding. Figures provided by Mohamed (1991:101, 104) show that the size of area cultivated with vegetables increased from 16,871 *feddans* in 1978 to 30,620 *feddans* in 1981, while livestock numbers increased from 0.8 to 1.2 million heads in the same timespan. While Khartoum can contribute to these sectors, its needs of other food items, such as grains, are totally dependent on supplies brought either from other regions in Sudan or from abroad (Mohamed 1991:107). Cultivation of food grains around Khartoum is now needed not because it is handy to provide fresh produce or because of the beneficiary transportation cost, but significantly because the regions, which should have supplied Khartoum with food, had long ceased to do so. In response, Khartoum State is now taking measures to secure its food supplies; primarily, to compensate for the "virtual water" it used to receive from the once-surplus generating NRZ. These include prohibiting the expansion of slum areas into agricultural lands and giving investors the opportunity to rehabilitate the Al-Waha Scheme and other schemes which were not performing well, in addition to establishing new schemes for more job opportunities. These also involved improving the seedlings of potatoes and onion and goat breeding, as well as establishing new complexes for dairy cattle inside the agricultural schemes in order to bridge the gap in dairies (*Al-Sahafa* 29 October 2004).

Besides the expansion in former agricultural schemes such as the Seleit Scheme (see Davies 1991a:109) in the vicinity of Khartoum North and Jummuiya Scheme in the vicinity of Omdurman, Khartoum State acquired five new small- and medium-scale agricultural projects (Table 8.4) and one large-scale agricultural project. The latter, the largest agricultural investment in Khartoum state was Sundus Scheme, located in Jebel Awlia Province, with an area of 110,000 acres

and irrigated by pumps, of which 12 (built by a Chinese firm) arrived in 1999 (*Sudan Update* 01 June 1999). Sundus Scheme is considered the second largest (private) scheme in the Sudan and the first of its kind in the Arab world (*Al-Sahafa* 24 September 2004), probably because of its high potential for expansion. It produces fruits, vegetables, dairy products, and meat for local consumption and export (PANA 19 May 1999). Investment in the Sundus Scheme reached US \$50 million out of the total designated amount of US \$100 million. Pumps, which cost US \$25 million, were already fixed and the beginning of operations were soon expected with the intention to attract investors through providing farms, dwelling areas, tourist, industrial, and commercial areas (*Al-Sahafa* 26 June 2004).

Agricultural schemes in the vicinity of Khartoum have also involved resettlement. Recently, the government planned to purchase farms in the vicinity of Khartoum at Sundus Agricultural Scheme for 2 billion Sudanese pounds (equivalent to over US \$800,000) 'for the purpose of helping the poor categories in the society' (*Sudan Update* 01 June 1999). This year, the Minister of Agriculture, Animal Wealth and Irrigation of Khartoum State inaugurated the Mansourab Dam west of Khartoum state as part of a number of small dams to be constructed with the aim of benefiting from valleys waters (*Al-Ray Al-Aam* 30 August 2004), primarily to cater for the needs of the Khartoum urban conurbation. Also on the agenda of Khartoum state are dams to be built on Wadi Al-Mugaddam and Wadi Abu Sweid, for which the minister urged a feasibility study to be completed (*Al-Ray Al-Aam* 30 August 2004). The large "rural" population now dwelling in Khartoum and its rural areas will certainly lead to expansion in irrigated agriculture. This is because, besides the pressures and need to meet food demands and the cheap labour, there is expansive land to cultivate. Here it is worth mentioning that Khartoum state alone has 1.7 million *feddans* of cultivable land of which only 17 per cent is utilised, despite closeness to consumers and availability of infrastructure, capital, labour, and water (Al-Mahal and Omer 1992:16-17). Khartoum, in this respect, will not run out of cultivable land, at least not in the next two to three decades; what Khartoum will face soon is shortage of water to irrigate those lands, as necessary for meeting its expanding food needs.

At the confluence of the two Niles, Khartoum, paradoxically, is viewed to suffer from scarcity of water (Abu Sin and Davies 1991:263, see also HCENR 2003). A quarter of a century following the signing of the 1959 Nile Water Agreement between the Sudan and Egypt, the former has started to face difficulties. According to Dellapenna (1997:126), 'In the Sudan, the water situation has become truly difficult, with growing resentment about having to watch the bulk of the Nile flow by unused while their fields parch. The Sudanese now complain of "shortages in the midst of plenty".' In fact, water scarcity is already considered critical in the Sudan (CIDA 2002). Irrigated agriculture in the Sudan faces water shortage not least because of the current method of water use (Guvele and Featherstone 2001:364).

Khartoum with the economic and political power it has accumulated, is showing an increasing desire to capture more water resources, which it could possibly translate into action. This represents the "second squeeze" or another stage in water stress, where Khartoum would start competing for access to irrigation water with rural areas in the RZ. With its stronger economic and political base, Khartoum could store more water to serve its sprawling population and its rapidly growing economic sectors. Its remaining 1.4 million *feddans* (592,620 ha) will require 5.7 million m<sup>3</sup> at the minimum to irrigate. And significant for us, Khartoum in this manner will be surrounded by rapidly growing towns which will certainly benefit from being on the orbit of this powerful primate city. Increase of population at the confluence of the Niles, thus, increases the political weight of groups therein and makes their contest for more water and therefore potential conflict more serious than previously conceived. The phenomenon of population concentration in Khartoum has serious hydropolitical repercussions, which pit Khartoum state against other upstream regions in the Sudan on the one hand, and the Sudan (with Khartoum representing the core of its political system) against other Nile riparians on the other. The bloody war fought remotely from Khartoum in southern Sudan thus involved directly or indirectly Khartoum's water needs.

Khartoum represents a case where a combination of factors makes demand for water increasingly high and therefore generates scarcity. These include an increasing aridity, increasing population concentration, and rapid urbanisation's effects on water quality. All of Khartoum's water demand is from the Nile. 'It is obvious that the Nile hydrology will be the prime factor in the life of the Capital Region in the future whether in the direction of land use or elsewhere under prevailing arid conditions' (Abu Sin and Davies 1991:263).

*Increasing demand farther downstream: Developing the "non-developable" arid RZ*

One of the important facts of domestic hydropolitics in the last decade, which defines the "new hydropolitical regime" of the Nile, is that Sudan has resorted to developing the arid RZ region, which requires investments in new infrastructure. In our view, this is a clear indication that resistance to the capturing of more lands in the rainfed zone has grown strong enough to cease this practice – it has blocked the open frontier, therefore, pushing investment farther into the secure north. Recently, the downstream RZ north of Khartoum started to witness significant development, namely in terms of infrastructure building. It now has two large dams (Merowe and Kajbar) under construction and five other dams already planned, the largest oil refinery in the country, constructed in the late 1990s at Al-Jayli, Shiryān Al-Shamāl highway, and a number of small- and medium-sized irrigated schemes of which 14 are already implemented. Out of the 28 downstream RZ schemes (Table 8.4), the arid RZ – outside the traditional agricultural core of Khartoum-Sennar-Kosti – acquired eight schemes in addition to the 14 schemes mentioned earlier. This number is double the combined number of

schemes acquired by the NRZ states of Greater Kordofan (3 states), Greater Darfur (3 states), and Gedarif.

Vested interests of the agricultural lobby combined with those of the NIF military officers interested in hydropower (Chapter 4) are likely to generate stark competition between the arid RZ and the central RZ. This competition is already manifest in the construction of the Meroe Dam. The latter is getting priority over the heightening of the Roseires Dam further south of the central RZ, which would have been more feasible. The largest waterworks in this region, however, are the Merowe and Kajbar dams, which may transform the region so dramatically. Besides the facilities it provides for small-scale irrigation, namely energy for a region famous for its pump schemes, the Merowe Dam reinforces large-scale irrigation in several dimensions. One dimension is that the construction of the Merowe Dam resulted in the regrouping of families in larger agricultural projects for the sake of resettlement in an area of over 180,000 *feddans*, involving 50,000 people. The Kajbar Dam project may generate the same dynamics. These projects are in the vicinity of rapidly growing towns as noted above and will certainly focus on irrigated agriculture. According to Abdalla and Abdel Nour (2001:41), both the Merowe and Kajbar dams are constructed 'to facilitate the expansion of wheat production area in the Northern State, not only for attaining self-sufficiency, but also for export'.

This huge infrastructure will, particularly, attract large numbers of immigrants and IDPs from the drought-hit plains to the west and the east. In addition, there are other efforts to make the Northern Region less hazardous for its own population and, therefore, lessen populations' exodus to other regions.

As pointed out above, such an increase in irrigated area in the arid RZ could be enhanced by the "redeployment" of capital invested in southern Sudan and Nuba Mountains, namely because of the security of this zone. Projects in the arid RZ might not be like the Gezira which attracted labour from up to 3,000 miles away, across the Sahelian belt in West Africa. But they will certainly attract large numbers from the drought-hit regions of Darfur, Kordofan, and the Eastern Region. They are also likely to attract people from southern Sudan, should Sudan continue united, as well as Egyptians, Eritreans, and Ethiopians.

The arid RZ is not alone in contesting for Nile water. The upstream RZ, which has virtually no irrigated schemes to this date, is also contesting for water for its rehabilitation and for the resettlement of its populations.

### **8.5.2 Rehabilitation and resettlement in southern Sudan and development of the upstream RZ**

As stated above, the Sudan aims to carry out its strategy of food security by using more Nile waters including developing the swamps. The development of the swamps, in our view, is inevitable whether for the unified Sudan or for the autonomous or independent state of southern Sudan. It is important to mention that

using water for southern Sudan's development is not a new proposal. At the time of its conception, it was hoped that the Jonglei Canal would 'provide irrigation for an initial 200,000 acres in the south and eventually, it is hoped, for many times that amount.' (Holt and Daly 1979:212, Tvedt 1992a:70, see also Ahmed 1993:120).

The 1990s added southern Sudan to those parts of the country which need water for agricultural expansion (Suliman 2000:177). Now, more than at any time before, southern Sudanese need water to rehabilitate their devastated region. In the 1980s, the concern with rehabilitation had from the beginning, been in the agenda of the SPLM, when in 1985 it established the Sudan Relief and Rehabilitation Association (SRRA). As a federation of southern Sudanese ethnic groups, the SRRA was assigned to coordinate relief and rehabilitation activities among displaced southern Sudanese (Mohamed Salih 1999:154).

Besides the almost total devastation of subsistence economies caused by the protracted civil war, two other significant changes imply the use of water for irrigation in southern Sudan. Firstly, is drought, which usually associated with regions of northern Sudan but recently affected even the wetter zones of southern Sudan (Mageed 1994, see FEWS Network 2003). Compounded by civil war, drought has contributed to worsening the famine situation and has made the picture in relation to food needs grimmer (Ahmed 1993:119 see USAID 2001). Changes in the landscape in the last two decades have certainly been significant and rural communities in the south have undergone their severe impacts. 'The complex web of circumstances, particularly in the context of the expansion of the areas of civil war, has led to certain *irreversible trends*. These include land degradation, loss of livestock, loss of wildlife and changes in their migratory habits, continuous mobility and excessive marginalization of rural communities' (Ahmed 1993:115, italics added). These and similar trends, as we noticed in northern Sudan, have increasingly undermined subsistence economies and their negative impact was counteracted through small-, medium- and large-scale *irrigated* agriculture.

Secondly, water will be needed in the upstream RZ to cater for the rapid urbanisation. If urbanisation in northern Sudan necessitated more thousands of hectares to be added to the irrigated area to produce food grains, southern Sudan may be in dire need of irrigation too, probably, even more than in northern Sudan in the short and medium term. This is simply because urbanisation in southern Sudan is happening much faster than in northern Sudan (Chapter 6).

The increasing weight of urban populations in the upstream RZ has certain implications for Nile waters. Any attempt to increase water supply for Khartoum and the arid RZ would not only generate competition between these areas and central RZ, but also and more seriously with the upstream RZ, i.e. Southern Sudan.

Southern Sudan is expected to make significant leaps ahead in economic development, given its considerable share in oil resources and the reconstruction

monies pledged by several donors (Chapter 9). Transport facilities and the road network to be constructed would give momentum to large movements of population between rural and urban and from urban to urban areas. In this regard, it is worth mentioning that the SPLM leadership has chosen a site on which Ramciel – the newly aspired regional capital of southern Sudan – would be constructed, implying further need of Nile water. ‘SPLM officials near Ramciel see [the Nile] as the source of electricity for their new capital and of water for a surrounding bread-basket’ (*The Financial Times* 16 February 2004). The expected new capital would be the centre of gravity in southern Sudan, if not the larger unified Sudan of the twenty-first century. Therefore, it is very likely to attract a sizable population.

## 8.6 Conclusion

This chapter provided empirical evidence of the impact of population concentration on the Nile water at the domestic level in the Sudan. It explained how the barriers, set by governments, for protecting the downstream RZ from “intruders” broke down, letting groups of immigrants and IDPs from the NRZ and upstream RZ increasingly claim “plots” in its rural and urban areas. It showed how pressures caused by population concentration have necessitated institutional responses, including resettlement and an officially sanctioned food security discourse with its clearest manifestation in the NCS, leading to a dramatic increase in the size of the country’s irrigated area, especially after funding difficulties eased in late 1990s. The facts of increased population concentration and responses to it indicate an increased linking of economic activities of the IDP groups to the Nile water. The chapter detailed the fallacy of hopes that immigrants and IDPs might return to their areas of origins. In fact, their numbers are now additionally increasing rapidly, not only because of the continued flow from the NRZ and upstream RZ, but also because of the high fertility rate among them.

Given the poor level of water management, population concentration implies additional demand for Nile water for irrigation, to meet – in the wheat and irrigated sorghum zones – the food needs of the previous inhabitants of the millet and cassava zones, added to the needs of the downstream RZ’s original population. The potential increase in irrigated area in the downstream RZ is facilitated by the large infrastructure recently constructed in its arid RZ part, reinforced by the rapidly increasing population, the demographic weight it induces, and the power of the urban communities in this zone. However, significant expansion of irrigated agriculture in this zone would generate additional scarcity because of this zone’s very aridity. Areas farther downstream are more arid than Gezira and its neighbourhood in the downstream RZ, which, comparatively, would lead to more loss of water to evaporation given the expansion in surface water area due to storages and the increased number of channels. The downstream RZ would also attract

more people from the NRZ and upstream RZ because of the social mobility that economic development would afford its inhabitants.

The chapter further outlined what appears to be potential conflict between the downstream RZ and the upstream RZ, which it saw as only natural, should there be no enhancement of the social resources necessary to improve irrigation systems and water management. Conflict over water may become serious within the downstream RZ, i.e. conflict between the central RZ and the arid RZ, due to the former's increased urban population and its needs for large water allocations aided by its power to effect them. In the central RZ zone, Khartoum state, in particular, acquired about 20 per cent of the total population of the Sudan and 31 per cent of its total urban population – gathering for itself a significant number of irrigation schemes; and it is increasingly demanding more water. However, as conflict at the national level remains largely potential conflict, i.e. likely to take some time to emerge save existing conflicts such as that over the Jonglei Canal project and that between the modern irrigated sector and pastoralists, it is the international conflicts which become its imminent consequence. Chapter 9 examine possible changes caused by transformations at the domestic level in the Sudan in connection with the two main contestants for Nile waters, i.e. Egypt and Ethiopia.

At best, should the Sudan remain united, the formula of sharing resources, including the Nile water, may radically transform the country such that the upstream RZ retains a decisive say on the waters flowing across its territory. Given the devastation it has undergone and the magnitude of droughts it has started to experience, probably for the first time in history, the south may give priority to benefiting from the waters to meet local needs. Demand for water on a large scale would certainly affect the math of northern Sudan and Egypt with regard to the original plan of the Jonglei Canal. National hydrogeopolitics in the Sudan, viewed in this manner, seems to jeopardise strategic international relations with one neighbouring riparian (Egypt) and to initiate a compromise with an erstwhile regional foe (Ethiopia) for the sake of increasing water supply. These changes in Sudan's attitude will be studied in Chapter 9.



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## 9 Impact of Environmental Scarcity on Sudan's Relations with Egypt and Ethiopia

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### 9.1 Introduction

The literature on the Nile has always associated the Sudan with Egypt, with regard to perspectives on upstream water demands, and the Sudan has largely complied with this view. The 1990s, however, brought some unusual changes that transformed this perception. Viewing the changes in the Nile's upstream, the Sudan seems to have reconsidered its, presumably, established shared vision with Egypt. In our understanding, the tension between the Sudan and Egypt since the early 1990s was accompanied by rapprochement between the Sudan and Ethiopia. In fact, it is this rapprochement that created tension with Egypt. This rapprochement, which is driven by environmental scarcity, seems to have shaken what we may refer to here as the "old hydropolitical regime" of the Nile and paved the way for dramatic changes to help redefine a "new hydropolitical regime" of this increasingly valued river.

This chapter argues that the importance of the Sudanese ruling elite to Egypt is their maintenance of the "open frontier" – the abode of "green water", the major alternative to Nile water (Chapter 1). Their failure to do so, therefore, has meant that the Sudan has become less important or even "useless" for Egypt. More so, Sudan becomes a threat if it is rendered *totally* dependent on the Nile water. On the other hand this change generates new dynamics between the Sudan and Ethiopia. Experiencing similar environmental challenges, the two countries are growing increasingly closer to counter-balance another riparian which historically curbed their development.

This chapter addresses the changing relationship between the Sudan and the two main contestants for Nile water, Egypt and Ethiopia. It argues that environmental scarcity gave rise to pressures that increasingly drove the Sudan to adopt more realistic approaches towards Nile waters and, therefore, towards these two riparian states. More precisely, the emotional ideological interactions which used to mediate tensions between the Sudan and Egypt are being replaced by an overt calculation of national interests in relating and responding to each other, including the resort to armed engagement. Similarly, with Ethiopia the Sudan adopted the stance of altering its long history of mistrust. This chapter argues that the regional conflict of states' interests, in the 1990s, had the potential to run high and

that pressing needs in neighbouring Ethiopia prompted the Sudan to reconsider previous arrangements for Nile water. Domestic pressures have generated both sensitivity in the Sudan to appreciate similar pressures in its most strategic upstream neighbour and, as a corollary, affected its attitude towards this neighbour. Thus, this chapter asserts that the Sudan's interests, particularly in the 1990s, appear to collide with those of Egypt, while they were increasingly becoming compatible with those of Ethiopia.

The chapter makes the connection between the transformations at the national level in the Sudan in the 1980s and 1990s and the change in Sudan's attitude towards Egypt and Ethiopia. In this regard, it argues that the pressure to meet real needs, politically expressed in the food security discourse (Chapter 8), and the change in the political weight of groups that benefited from the development of the river has affected the proclaimed "Unity of the Nile Valley" (deemed to be that between Sudan and Egypt) and invites new inter-state alliances influenced by the new population-political contours. Pressures from the NRZ and upstream RZ population as well as increasing needs of the population of the downstream RZ itself, push the Sudan to utilise all of its quota agreed in 1959 – Egypt has benefited from a significant part of it for more than three decades perceived as "water-on-loan" (Chapter 1) – as well as going for a bigger additional share of Nile water. The Sudan's change of attitude towards Egypt and Ethiopia has implications for the whole Nile Basin.

This chapter is divided into two main sections; the first one (i.e. section 9.2) addresses Sudan's relations with Egypt, the other addresses Sudan's relations with Ethiopia. The first section is divided into five sub-sections. Thus, sub-section 9.2.1 gives a short historical note on relations between the Sudan and Egypt, primarily by discussing the factors behind the construction of an "imagined community"<sup>1</sup> in the lower reaches of the Nile and its contribution to "relationships" and consolidating the alliance between riverain Sudanese and Egypt. Section 9.2.2 portrays aspects of change in Sudan's attitude in the 1990s, representing crossing the "redlines" in Sudan's relations with Egypt and how this has strained relations with Ethiopia. Section 9.2.3 discusses how this historical relation has undergone serious change due to the population flows from the NRZ and upstream RZ – the new population distribution and consequent population-political contours. Section 9.2.4 looks into processes of evolution, which we presume are challenging the very foundations of the "imagined community", namely nation-state building and national security associated with it. Section 9.2.5 discusses the internal hydropolitics in the Sudan and how it is increasingly calling for utilisa-

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1. Imagined community refers to a community to which one has a sense of belonging. Benedict Anderson (1991:5) saw in the "nation" 'an imagined political community - and imagined as both inherently limited and sovereign.' In his view 'It is imagined because the members of even the smallest nation will never know most of their fellow-members, meet them, or even hear of them, yet in the minds of each lives the image of their communion.'

tion of more water in the Sudan, therefore, implying the need for changing the status-quo of the Nile waters.

Section 9.3 aims to scrutinise the causes of change in Sudan's attitude towards Ethiopia and is divided into two sub-sections. Sub-section 9.3.1 gives a general overview of Sudan's relations with Ethiopia mainly to portray how these relations were tense or at best lukewarm. Sub-section 9.3.2 is about how lukewarm relations between the Sudan and Ethiopia were transformed and how they are now characterised by an increasing tendency to push for mutual advantages. Thus, this sub-section elaborates on what has pushed Sudan to seek closer ties with Ethiopia by considering short-run and strategic benefits.

## **9.2 Sudan's relations with Egypt**

North Sudan and Egypt, for a long time, entertained a call and aspiration for unity between them. 'In modern times an ideology arose, inspired by the Egyptians but eventually adopted by the Sudanese as their own, that all the peoples of the Nile Valley (*but not the Christian populations of the Ethiopian highlands*) are one and only the nefarious design of outside forces have kept them apart' (Waterbury 1979:43, italics added). The call for unity took practical form: *hydropolitically* manifest in concerted efforts to deal with water demands by upstream Nile riparians; *politically* and *economically* manifest in the integration of these two spheres (Dellapenna 1997:132); and militarily in a common defence treaty reached in 1976 (Woodward 1984:159, Suliman 2000:179). More recently, the call for unity and integration was proposed in the "Four Freedoms" agreement of 2004. This agreement, concluded in January 2004 between Egyptian President Hosni Mubarak and Sudanese President Omer Al-Bashir, 'gives Egyptians and Sudanese freedom of movement, residence, work and ownership in either country' (*Sudan Tribune* 16 June 2004). At the basin level, while Egyptians and Sudanese riverain elite view themselves as members of the same group – an "imagined community", their call for the integration of their countries presents them as a "political coalition" with Nile water being crucial in its continuity or ending.

### **9.2.1 The Nile Valley's "imagined community" and Egypt's containment of the Sudan**

Egypt has maintained its influence in the Sudan for quite a long time. This is attributed to the role of forces opting for unity with Egypt known as the "unionists", driving the Sudan towards the Mediterranean, as opposed to the "independist" forces driving it towards an independent Sudan (Haj Hamad, 1980). The call for "Unity of the Nile Valley" has been endorsed by ideologies of Arab nationalism at one level and by the Islamic brotherhood at another level, emphasising another ideological construction, that the Sudan is the "bridge between the Arab/Muslim

and African worlds". The two constructed ideologies of the "Unity of the Nile Valley" and the "Bridge to Africa" represent the ideals of the force driving the Sudan closer to Egypt or, what the Sudanese strategist Haj Hamad (1980) calls the force driving the Sudan towards the Mediterranean, as noted earlier.

The driving force towards the Mediterranean has historically shaped and maintained "fraternal" relations between (northern) Sudan and Egypt. In our understanding, the implicit ideology that underlies the call for "Unity of the Nile Valley" is the common peasantry of the valley in Egypt and north Sudan. This relationship is not necessarily the outcome of colonisation in the periods 1820-1985 and 1898-1956. Not least, the Nile's "imagined community" was built based on the countries' gaining of livelihoods from the same source and developing similar means of production. The valley generated a compatible worldview in both north Sudan and Egypt, with the aspiration for unity being a natural outcome (El Zain 2001). Communities along the banks of the Nile in Egypt and the Sudan have the same worldview simply because both are the "gift of the Nile", where this river remains 'the great lifeline of arid northern Sudanese Nubia and Egypt' (Beswick and Spaulding 2000:xv). Moreover, 'Egyptian and Sudanese enjoy a common ancestry, since the migration of Egyptian traders (*jallaba*) and tribesmen across the non-visible frontier, started long before Islam came into the region. The coming of Islam in the seventh century A.D. gave an added impetus to that migration' (Warburg 2000:75). The increasing Arab immigration in the following centuries (Chapter 6) paved the ground for significant changes to come. 'Egyptian traders and sufi sheikhs gradually planted the seeds of Islam in northern Sudan and brought about Arabization of its riverain tribes' (Warburg 2000:75). Thus, since long before the Turkish invasion, north Sudan under Nubian kingdoms and Funj rule developed close relations with Egypt, where the bond of the Nile seems to be the major factor behind the development of historical ties. Starting in the early nineteenth century, relations between northern Sudan and Egypt witnessed a dramatic change, ultimately contributing to create the riverain elite in the Sudan, which established the historical alliance with Egypt.

The annexation to Egypt of the "isolated" tribes of northern Sudan in the nineteenth century gradually incorporated them into a discourse that somehow dismembered them from their fellow "compatriots" to the west, south, and east – their cultural milieu of the wider Sudanic belt. A shared "downstream-centrism" with Egypt evolved, making downstream riverain Sudanese increasingly a contrast to Sudanese communities in the upstream RZ and NRZ. The nineteenth century witnessed the introduction of Orthodox Islam and the beginning of the twentieth century saw the alienation of a large segment of Sudanese "intelligentsia" by Arabist discourses and the establishment of a boundary between northern and southern Sudanese (for details see Ibrahim 1987). Polarisation then emerged.

Northern society and economy reflect long-standing external linkages; southern society is very much a product of spatial and historical isolation. The northern polity and economy is highly centralised; southern polity and economy is decentralised and fragmented. These contrasts belie the Sudanese “Arab” characterisation of their homeland as *dar [al]Islam* (land of peace), which is at least partially a function of their perception of the “African” south as *dar al harb* (land of war) (Goldsmith *et al.* 2002:189, square brackets added).

The engagement of the *jellaba* in business networks with the Turks since before the mid-nineteenth century increasingly pulled them northwards, politically and culturally. Even when the riverain Sudanese lived among their fellow non-riverain compatriots for longer periods, it seems that their sense of belonging went more towards the direction that the river flows. Referring to the relationship between immigrant riverain Sudanese and their host Keira rulers of the Darfur Sultanate, Spaulding (1998:57) states, ‘[D]espite royal favour the immigrant community of northern Nile-valley settlers would transfer its loyalties effortlessly to the Turkish conquerors.’ The ideology of the “Unity of the Nile Valley”, thus, is a late manifestation of this lengthy evolution. The *valley*, in this account, has always had its political ideological connotation and reflected the aspired unity between Egypt and the Sudan. The dominance of the riverain Sudanese in politics in the Sudan can be attributed to this historical relation to the *valley*, which implied external support (from Egypt) for running internal (Sudanese) affairs. The ideology of “Unity of the Nile Valley” – a portrait of an imagined unity – could be legitimate, in this sense, only by reference to the aspirations of the riverain Sudanese. These are only the communities dwelling along the banks of the Main Nile (north of and including Khartoum). However, as we shall see below, these communities have now been divided by the engineering of the Nile and the opportunities generated by this very engineering subjected them to a cultural mix from expansive regions that historically remained remote from the Nile.

The creation of Sudan’s new riverain elite during the Condominium rule presented the germs which would bind this riverain elite in an almost permanent alliance with Egypt. This is basically because the creation of the new Sudan (Chapter 3) put the riverain Sudanese within a larger geography, many times larger than their narrow *valley*, and in which they were exposed to cultural groups that they increasingly felt they did not belong to, precisely due to the drive towards the Mediterranean. External bonds and the associated worldview increasingly estranged the riverain elite to the groups to the south, especially groups dwelling in southern Sudan today. Thus, embedding the “reactive” response of a minority, these riverain elite often sought the backing of Egypt to maintain rule against, in part, their main political rival, i.e. the Umma Party, and in part against other communities they had failed to tame. Worth noting is that, at the core of the Umma Party was the Mahdist Ansar religious sect, however,

the NRZ western Sudanese largely backed this party,<sup>2</sup> which represents and inherited the anti-Egyptian sentiments dating back to the Mahdi (Waterbury 2002:135, see also Mohamed Salih 2001:80, Galatoli 1950:138).

The “Unity of the Nile Valley” had been propagated as an agenda item to be attained by Sudanese nationalists and Egyptians. Al-Azhari, a prominent Sudanese nationalist leader, according to Waterbury (1979:49), ‘began to brandish the slogan of the unity of the Nile Valley – free, of course, from British hegemony – and turned to the Egyptians as his allies. He then founded a genuine political party in 1943, the Ashiqqa (or Blood Brethren).’ Characteristic of the *Ashiqqa* Party is that it ‘was fundamentally urban and intellectual and made little effort to attract rural support’. On the other hand, to ensure the option of “Unity of the Nile Valley”, Egypt of the early 1950s was more cautious in approaching the Sudan than Egypt of the following decades. During 1952-56, Egypt faced difficult options in relation to the Sudan. Should it deny Sudan’s right to independence, and therefore risk engaging in endless wars with groups of population that it failed to tame alone? Or should it agree to Sudan’s self-determination in the hope of maintaining hegemony over it through the “Unity of the Nile Valley” slogan. Egypt opted for the latter and Sudan won its independence in 1956 (Seri Eddin 1998:294).

However, this is not a policy towards the whole of Sudan – Egypt’s attitude towards the “independence movement” comprising the Umma Party and southern Sudanese parties, among others, was different and communities outside the Nile Valley did not count in its math. In 1957, Egypt deployed its troops into northern Sudan after the failure of its negotiations with the Umma-led democratic regime in the Sudan to settle Nile water matters. When military confrontations were about to occur, Egypt withdrew, therefore, the border dispute was avoided (Wolf and Hamner 2000, see also Seri Eddin 1998:294). However, since then, Egypt seems to have changed its cautious policy to one of overt meddling in the Sudan’s internal affairs, especially in regard to democratically elected governments. This meddling had, by backing military regimes, reinforced the hegemony of riverain Sudanese on the one hand and increasingly alienated them from their domestic political environment.

The military regime that took power in the Sudan in 1958 was the outcome of threats posed for national security, mainly on the northern frontier with Egypt. It was this regime that signed the 1959 agreement with Egypt. Naturally, the collapse of the military regime again brought the issue of Nile water to the forefront, espoused by coalition governments. The short-lived democratic experience (1964-69) was toppled by a clearly pro-Egyptian military coup, where the Sudan was harmonised in line with Egypt’s perception of water scarcity.

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2. The Unionists led by Al-Azhari and leaders of the Khatmia religious order, according to Waterbury (1979:48) ‘joined only by their hope that Egypt could aid their respective causes: Sudanese independence on the one hand, and the diminution of the Mahdist Ansar on the other.’

Throughout the period following independence, the riverain elite appealed to a wider solidarity with the Arab region and largely contributed to constructing a new identity and divide between an Arab/Muslim northern Sudan and an African/Christian/animist southern Sudan. Thus, the dominance of the riverain elite over power in the Sudan has been largely attributed, true or false, to the backing of Egypt, which at another level is the leading Arab state. Two incidents exemplify Egypt's *direct* intervention in backing the riverain elite. The first is when Egypt helped crush the Mahdists who revolted at Jazeera Aba in 1970 against President Nimeiri's dictatorship. The second was when it helped re-install Nimeiri in power after Khartoum was conquered by troops of the opposition National Front in 1976.<sup>3</sup> In both cases Egypt intervened militarily (Swain 1997:681). Of course this intervention is for pursuing well-specified ends. 'In return for helping [Nimeiri] stay in power, Sudan agreed to construct the Jonglei Canal, which was to begin in 1978' (Swain 2002:296-7). President Nimeiri not only agreed to the capturing of the resources along and around the Jonglei, but also to boost *rainfed* cultivation, which Egypt stressed as Sudan's great agricultural potential (Chapter 1). Egypt also influenced international creditors and Arab investors to optimise the potential of this rainfed sector and itself was active in such investment (Chapter 5). This process involved the distancing of the Sudanese private sector from investing in the irrigation sector and leaving it, largely, for the government. Thus, directly and indirectly, the mechanised farming enterprise became an inherent part of the Nile enterprise. While mechanised farming, through the use of "green water", enhanced the regime of capital accumulation for the Sudanese *jellaba*, it actually left much "blue water" to flow to Egypt, including a quarter of Sudan's legally defined share of Nile water.

The 1970s was a decade overshadowed by the Nimeiri dictatorship, which brought a radical shift in Sudan's independent foreign policy signalling the beginning of structural dependence on Egypt. Egypt, espousing an Arab nationalist ideology, held out a digestible dogma for opportunistic army officers to take refuge in, tying the Sudan more tightly to Egypt and through Egypt to other Arab countries.

The grain basket strategy adopted by Sudan and the Gulf states in the 1970s was not confined to this goal; in fact, it 'would have been of some geopolitical importance, enabling in particular Saudi Arabia to play a more independent role in regional and world affairs' (Barnett 1988:4). With Egypt playing the role of a middleman, it was the monies of Saudi Arabia and other Gulf states which tightly tied the Sudan to the Arab politics. Ironically, it was the middleman which kept re-directing the policy of the beneficiaries.

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3. Officers and rank and file troops of National Front, which infiltrated into Khartoum from Libya and pushed Nimeiri into hiding for three days, were in the majority western Sudanese followers of the Umma Party. The incidence was portrayed mercenary and racist act.

Until Nimeiri's ousting in 1985, the espousal of unity with Egypt continued intact; sometimes anticipated as a tripartite union between Egypt, Libya, and the Sudan (the Union of the Three Republics) (see Swain 1997:681) and sometimes in the form of integration (*Al-Takāmul*) between Egypt and the Sudan. An agreement launching the latter was 'signed by Presidents Sadat and Nimeiri in February 1974, which for the first time, since 1956, revived the quest for a united Nile Valley. From then until Nimeiri's downfall in April 1985, the Sudan became a close and dependent ally of Egypt and supported Sadat's policy against the almost united Arab and Muslim front' (Warburg 2000:79). As part of *Al-Takāmul*, the two presidents in February 1974 signed an accord that launched the Jonglei project (phase I) with costs to be shared by the two countries (Waterbury 2002:140).

President Nimeiri, who befriended and survived three Egyptian presidents, would not miss signing another major agreement with the third Egyptian president. Less than a year before he launched his Islamic state in the Sudan, Nimeiri signed with Husni Mubarak the Integration Charter in 1982 (for details see Swain 1997:681-3). In its preamble, as Warburg (2000:79) notes, 'the "historic and eternal unity" of Egypt and the Sudan was emphasized. It was undertaken in accordance with the will of the two peoples "joined in an unbreakable unity by the everlasting Nile"' (see also Swain 1997:682-3). This was not a simple political declaration. 'The Nile Valley Parliament and its supreme integration council met alternately in Cairo and Khartoum, in order to iron out the details of the future integration of foreign policy, economics, development plans and educational and cultural programs of the two halves of the united Nile Valley' (Warburg 2000:79, see also Dellapenna 1997).

In fact, entertaining the fact that riverain Sudanese could be its loyal pets, Egypt has gone far in relation to them, to the extent that it has set clear limits with regard to both internal and external policies. According to Mohamed Abulgasim Haj Hamad (1999:7), in relating to Sudan, Egypt set "redlines" that the former should not cross. Haj Hamad notifies four such redlines, which are considered crossed by Sudan if, firstly, its political regime would convert it from being a drainage state in consensus with Egypt to one which seeks independent relations with the upstream states. Secondly, if Sudan's regime would cause the cessation of southern Sudan. Thirdly, if Sudan would surpass its assigned water quota according to the 1959 agreement. Finally, if Sudan in its Arab and international relations would take avenues that Egypt may consider undermining its regional weight or containing its acclaimed position.

While riverain Sudanese might approve of Egypt's intervention in Sudan's internal affairs and, therefore, comply with the above-noted four redlines, others resent such a role, for it nullifies their pressure on centralised governments for political, legal, and economic reforms. Certainly, and more vocally, southern Sudanese, in the face of injustices perpetrated by the riverain elite, took up guns and have held them, for more than 38 of Sudan's 48 years of independent rule, are

against such unity. The interests of groups which resent Egyptian meddling in Sudan's internal affairs were best expressed by the NIF following its takeover of power in 1989, signalling a new era in the relationships between the Sudan and Egypt.

### 9.2.2 Sudan's relations with Egypt: From historical compliance to crossing the redlines

A significant change in relations between the Sudan and Egypt, primarily in the form of increased tension, has taken place since early 1990s. This can be attributed to the altered population-political contours, which increased demand for water and, additionally, served to boost the political gains of the NIF party (El Zain 2006a, 2006b, 2005). Chapter 8 detailed the increase in demand for Nile water caused by population concentration, which also invoked the agricultural lobby to speculate on the greater fortunes to be made with irrigated agriculture to meet the grain shortage. This agricultural lobby would never have allowed a single drop to flow to Egypt beyond its defined quota. In fact, in a couple of cases it behaved as if there was no agreement with Egypt. Use of Nile water was a natural step for this agricultural lobby. This drive was inevitable in the face of the speculation associated with occurrence of droughts and other causes of food shortages.

After the NIF regime assumed power in 1989, the protection for the Sudan of a fair share of Nile waters became a foreign policy priority (Ahmed 2001:7), perhaps the first official assertion of its kind since the 1959 agreement (El Zain 2006a, 2001). The sympathetic, compliant riverain elite discourse was thus displaced. Practical steps were taken in the same year, namely the heightening of the Roseires Dam to store three times its 1966 installed capacity (Chapter 8). 'The Sudanese government has proceeded unilaterally in raising the height of the Roseires Dam without agreement with Egypt, let alone cost-sharing as provided for in the 1959 agreement' (Waterbury 2002:136).

Under such circumstances, Egypt reacted to Sudanese moves with two interconnected actions, indicating a radical change in its policy towards the Sudan in such a way that the latter perceived as a threat to national security. The first of these moves was Egypt's feverish engagement in large water constructions and desert reclamation efforts totalling 2.5 million *feddans*<sup>4</sup> and the other is that Egypt, apparently as part of a new policy towards the Nile, began to consider the Sudan irrelevant in connection to the Nile. Haj Hamad (1999:15) note that two authors (Botros Ghali and Abdelmalik Oada), who are influential with regard to decision making in Egypt, called for neglecting the Sudan and initiating bilateral negotiations with the upstream riparians. Sudan may have become irrelevant for

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4. Two projects of this kind are the Northern Sinai Agricultural Development Project (NSADP) for which an area of a million *feddans* was reclaimed (Bleier 1997) and the New Valley, which covers a reclaimed area of 1.5 million *feddans*.

Egypt for practical matters – being politically unstable, therefore, unable to facilitate Egypt’s previous plans for increasing its water supply. ‘Sudan’s instability and the fact that forty years after independence it is still torn apart by ethnic, religious and sectarian conflicts, suggest that Egypt cannot regard the Sudan as a dependable neighbor’ (Warburg 2000:74, see Swain 2002, 1997). This probably led the Egyptians to re-evaluate and even redefine what bound them to Sudan in the past and most importantly to see the possibility of reaching an agreement with Ethiopia.

It has been argued that in recent years ‘Egypt’s relations with Sudan are no longer emotional, political, or historical, as they were prior to Sudan’s independence, in 1956’ (Warburg 2000:73). However, arguably, Egypt’s attitude has always largely been one of rationally pursuing and safeguarding its public interest in relating to its southern neighbour, which itself related to Egypt mainly emotionally. What is new in Egypt’s attitude was the disappearance of its former lip service to “unity” with the Sudan. Egypt’s attitude, was recently expressed by the Egyptian analyst, Milad Hanna (cited in Warburg 2000:73) ‘[H]istorically the slogan of those advocating unity was always the “Unity of the Nile Valley” and not the “Unity of Egypt and the Sudan”, since the *Nile* was the bond uniting the two regions, not its people’. Such clarity of Egypt’s position, as expressed by this analyst, is apparently new, for in the past “Unity of the Nile Valley” was always captured as between the Sudan and Egypt (for details see Galatoli 1950:119, 122-41) (we shall return to this point later). The line of policy Egypt followed is that the Sudan would remain an ally in as far as it complies with Egypt’s Nile policy. Otherwise, Egypt may punish the Sudan, should the latter act in a way that it interprets as against its interests.

Given this “change” in Egypt’s attitude, both moves mentioned above might lead to legal claims from the side of Egypt on Sudan’s *unused* portion of its quota. While this has been perceived as “water-on-loan” to Egypt for more than three decades now, it can no longer be considered surplus, as the Sudan already has plans for its exploitation and, moreover, its agricultural development potential can absorb several-fold its current quota size. The rising pressure from the upstream riparians and Egypt’s engagement in large water constructions has prompted the Sudan to revise its relations with Egypt too, especially now, under the Sudan’s “Islamic” government, where there is no ideological assertion of sisterhood with the “secular” government of Egypt. Sudan is increasingly aware that the upstream countries are going for the Nile waters. The fact that Egypt, which is now betting on stronger relations with these upstream riparians, gives rise to the prognosis that she is likely to strike a deal with them at the expense of the Sudan. Sudan’s unutilised quota, i.e. the “water-on-loan” to Egypt, may be the prey, given Egypt’s large water constructions, which imply that Egypt may not relinquish any amount of water to its new upstream partners. In our view, this could become true, particularly if Sudan’s political and economic system is further destabilised and if it turns into a “stateless” society, predictably, like Somalia (see

Elhance 1999). Such a situation would give Egypt a chance to strike a new deal with other riparians in Sudan's absence. Under such circumstances, Egypt would likely make more legal gains at the expense of Sudan's "unused" quota and probably would swallow up more of the part already in use.

To cut Egypt's ambitions short, the Sudan engaged in two moves that were not only aimed to stop the "water-on-loan" but also were threatening to Egypt. The bond between these two moves, however, resides in the social effects of environmental scarcity in the Sudan. The first move was the Sudan's agreement with Ethiopia in 1991 (detailed below) and the second was the announcement of Sudan's National Comprehensive Strategy (NCS) launched in May 1992 for agricultural development and the country's associated attempts to augment its water supply, to store and to use more water from the Nile, which were detailed in Chapter 8.

*Seeking allies and clients in the 1990s: Sudan's three cards for manoeuvre*

To counter-balance Egypt's response (manifest in the construction of large waterworks and including the possibility that it would lay claim to the "water-on-loan" from the Sudan), the Sudan in the 1990s used three cards, namely (i) allying with Ethiopia, (ii) seeking deals with Israel, and (iii) seeking deals with oil producers and potential investors in irrigated agriculture. All three mean crossing the redlines in Egypt's view (see Haj Hamad 1999) as they have bearing on Egypt's claimed interests – they either put heavier pressure on Egypt or challenge its position as geopolitical capital of the region.

*Allying with Ethiopia*

Among the three cards, the strategic move by the Sudan to warm up relations with Ethiopia, the erstwhile distant co-riparian neighbour (Section 9.3), was the prominent in creating tension with Egypt. In 1991, the Sudan signed an agreement with Ethiopia – the most difficult Nile contestant for Egypt – committing the two countries to the principle of equitable utilisation of the waters of the Blue Nile and the Atbara River. The two countries established a technical joint committee to exchange data and to explore cooperation (Dellapenna 1997:132-3). Their major water projects, which their newly established Blue Nile Valley Organisation (BNVO) was to study, would have been detrimental to Egypt (Said 2001). In so doing the Sudan has already jeopardised the "united front" which binds it to Egypt. The seriousness of the agreement with Ethiopia in changing the "old hydrological regime" of the Nile water is seen in strengthening Ethiopia's position, which appeals to equitable entitlement as the guiding principle in international law of shared rivers (Shapland 1997:82, Dagne *et al.* 1999:228) in its contest with Egypt (Chapter 10). The very signing of the agreement, thus, set the stage for conflict between the Sudan and Egypt. 'The worst situation for Egypt would be for Sudan and Ethiopia to strike a separate deal on Nile waters al-

location that excluded Egypt' (Whittington and McClelland 1992:152). Thus, for Egypt, the Sudan has begun to appear similar to Ethiopia (the historical source of threat to the Nile flow) in Egypt's imagery and its reaction has been an increasingly tense atmosphere (see Bleier 1997:116). In fact, tense relations with the Sudan started a few months after the Egyptians realised they had backed the wrong military coup in the Sudan, i.e. the June 1989 coup led by the NIF cadres in the Sudan's national army. The strain peaked in Egypt's provoking occupation of the disputed Halayib Triangle in 1992, which Egypt occupies till today (see Al Bander 2000:28). This occupation, following the signing of an agreement with Ethiopia, is of special significance here. In our view, it is pressure caused by population concentration and the associated food security discourse (Chapter 8) that has pushed the Sudan closer to Ethiopia (detailed in Section 9.3) and, therefore, generated conflict with Egypt.

### *Seeking deals with Israel*

It is almost taken for granted that threats to the Nile may come from southern Sudan and Ethiopia in their relations with Israel (detailed below) and not from northern Sudanese in relation with the same state. However, in the 1990s, as Suleiman (1997:19) points out, the Sudan covertly engaged in a water deal with Israel, where it agreed to sell to the latter 4 billion m<sup>3</sup>. Though there is no evidence to prove that this deal worked out, the Sudan being the weakest in the regional power chain, might be the best option for holding the water tap for Israel instead of Egypt. Israeli officials who objected to Egyptian President Sadat's proposal of providing Nile water 'because they thought it was dangerous to depend on a former enemy and untried friend for such a vital resource' (Amery 1993) might be tempted to try with Sudan. As such, the Sudan would have presented a major threat to Egypt.

Interestingly, while the religious fundamentalists in Egypt represent a strong force curbing full cooperation with Israel, contributing to the politically very sensitive issue of water export (Donkers 1997:137), it is under the fundamentalist rule in the Sudan that water cooperation with Israel claimed a position of importance though covertly.

Contact between the Sudan and Israel seems to follow the same old strategy of not offending the Arabs directly; yet playing the game as some Arabs do. Thus, despite the fact that it is in a state of declared war against Israel since 1967, the Sudan seems to have engaged in some covert contacts with the latter. It was reported that a Sudanese minister, while on a visit to Morocco and Qatar in the late 1990s, initiated contacts with Israeli officials, supposedly in a bid to establish non-official relations between the Sudan and Israel (*Menareport* 14 January 2003). Very recently, in early 2004, however, the Sudan came out openly in cooperating with Israel, when 'Sudanese officials agreed to assist Israel in bringing 18

thousand Ethiopian Jews from Addis Ababa via Khartoum' (*Sudan Tribune* 24 January 2004).

Sudan in the 1990s, probably felt threats similar to those Ethiopia had undergone in previous decades, providing the reason why it sought some form of interaction with Israel. However, pressures of environmental scarcity also might have pushed the Sudan to seek such relations with Israel. The latter is viewed as able to provide Sudan with advanced technologies to maximise crop yields and agricultural training (*Menareport* 14 January 2003), especially on efficient water use systems. Sudan's interaction with Israel aggravates Egypt's fears. 'Agricultural cooperation between Israel and Sudan is perceived as a threat by some in Egypt, who fear that Israeli water engineers working in Ethiopia and Sudan could reduce the flow of the Nile, Egypt's only source of fresh water' (*Menareport* 14 January 2003).

*Seeking deals with oil producers and potential investors in irrigated agriculture*

After the mid-1980s Sudan's relations with Egypt grew sourer, mainly due to stark differences in political regimes – Sudan regained democracy and Egypt remained as it was. Two moves, independent of Egypt, towards the most powerful Arab oil states could be mentioned here as reasons for tension with Egypt, as indicators of crossing the redlines. Firstly, Sudan revived the plan, originally conceived by Egypt in the 1930s, of diverting water from the Nile through a pipeline to Saudi Arabia (Falkenmark 1989, see Al Bander 2000). Sudan stands a better chance than Egypt to trade water with water-stressed countries. Its military weakness gives it advantages in relation to its clients who carefully weigh the power of who holds the water tap. Secondly, following the toppling of the democratic regime, through the NIF-led military coup Sudan backed Egypt's regional rival in leading the Arab world, Saddam Hussain's Iraq, during the 1991 Gulf War (Swain 1997:683, see Warburg 2000:81). As a result of these forms of "disobedience" Egypt engaged in a number of ways to punish the NIF regime in Sudan. Egypt also seized the opportunity of Sudan's relationship with Iran to demonise the former and condemn it as cause of imminent threat. In the late 1990s, Egypt accused Sudan of deploying Iranian troops in the Red Sea (*Al-Sahafa* 18 September 2004).

However, the most significant cause of tensions is probably associated with the current enormous flow of investment capital from the oil states into the Sudan. The Sudan is currently implementing huge water construction works with investment by the Gulf States (Chapter 8). The enormous Arab investments of the 1970s, which were decelerated or almost stopped, have now been resumed. In fact, what makes Sudan's actions tension-generating ones is that now it is the Arabs, independent of Egypt's influence, who apparently direly want to invest in the Sudan, including in its irrigated agriculture sector.

In fact, Egypt invaded the Halayib Triangle in 1992, because the Sudan had crossed the “redlines”. Egypt, in this respect, endorsed the accusation that it was strategically involved in weakening its upstream co-riparians through ‘fomenting dissent and helping rebellions in Sudan and Ethiopia’ (Elhance 1999:65-6). Given such accusations, and the practical steps of intervention, the Sudan clearly has no special place in the ideals of “brotherhood”, which the Sudanese riverain elite entertain.

Sudan increasingly turned critical of the arrangements in the Nile Basin. ‘More recently, Sudan has demanded modifications to the 1959 agreement in order to increase its share though strong Egyptian opposition has stalled any efforts to revise it. Throughout the 1990s, Sudanese officials have repeatedly used threats of withholding Nile waters from Egypt in order to buttress their claims’ (Swain 2002:298).

Sudan’s moves in the 1990s increased Egypt’s fears. According to the Egyptian expert Abdel-Malek Owda (1999:64), the Sudan would like to build an alliance with Ethiopia to mutually benefit from Nile water, and this alliance is expected to involve the states of East Africa. Foreign commentary on the agreement between the Sudan and Ethiopia, in his view, indicates that should these agreements be implemented they would threaten the 1959 agreement (Owda 1999:58). The assassination attempt on President Mubarak’s life in Addis Ababa in June 1995 triggered a fierce war of words between Egypt and Sudan, with the real issue being radical Islamism, which was believed to be behind the attempt (Warburg 2000:73). A few days following the attempted assassination, Mubarak accused Sudan’s NIF leader Turabi of involvement in the plot and warned of a sharp response if Sudan continued to provoke Egypt (Sudan Update 07 December 1995, Warburg 2000:73, Waterbury 2002:22-3). The following day, an aide to Turabi told a Lebanese newspaper that ‘any Egyptian attack on Sudan would become a massacre for Egypt’ (Sudan Update 07 December 1995). An aggressive temper loomed. According to Bleier (1997),

Egyptian Foreign Minister Amr Moussa bluntly warned Sudan’s Islamic leader Hassan al-Turabi not “to play with fire” after reports quoted him as threatening to cut Egypt’s water quota. Information Minister Safwat el-Sherif said Egypt “rejects the hollow threats [on water] from the Sudanese regime. Any [Sudanese] wrongdoing or infringement will be met with full force and firmness” (square brackets original, see also Warburg 2000:73, Swain 1997:685).

In September 1995, the deputy prime minister of Egypt and influential figure in the ruling party, Yusef Wali, declared that the factions opposing the Sudanese government had formed a military force which would carry out action against the Sudanese government, noting that Egypt backed this force (*Al-Sahafa* 18 September 2004). At the peak of tensions, following the assassination attempt on Egypt’s president Husni Mubarak, as we shall detail below, the Permanent Joint

Technical Committee (PJTC) on the Nile, the body set up by the Sudan and Egypt in 1959 to monitor the agreement, missed some of its quarterly meetings (Warburg 2002:23).

Events on the ground were no less dramatic. In July 1995, military patrols from the two countries clashed in the Halayib Triangle and several Sudanese troops lost their lives (Warburg 2000:74). This was quite the reverse of the rhetoric of sisterhood and unity between the two nations.

Egypt's perceived pressures should not have caused such a dramatic change in Sudan's foreign policy. Given that the Sudan has maintained its place in the "united front" with Egypt for three decades without interruption, despite periods of serious conflict, the above changes in foreign policy, especially the signing of the agreement with Ethiopia without involvement of Egypt could be considered the first significant departure from the norms governing the relationship between the two countries. In our view, these are mere immediate causes that triggered conflict. Thus, some other causes for this change, therefore, need to be dug out.

In our understanding, the underlying causes of Sudan's change of attitude since late 1980s are present in two internal causes and one external cause. The two internal factors are closely connected: one political-ideological and the other environmental. The political-ideological cause – the outcome of the prevailing despotic divide-and-rule measures and authoritarian economic development – is manifest in the accumulative agony among larger segments of Sudanese society which were politically and economically marginalised due to the alliance between the riverain elite (especially under military regimes) and Egypt. Unity with Egypt does not appeal to these *agonised* groups. The environmental cause is manifest in the mass population displacement and dramatic merging of the RZ and the NRZ/upstream RZ, bringing the *agonised* into the historical seat of power. The third cause, the external one, behind the change in Sudan's attitude towards Egypt, is the offset of the same harsh conditions which generated the above-mentioned demographic change in Sudan's most strategic neighbour, Ethiopia. Ethiopia's moves towards developing its part of the Nile, in response to these harsh conditions, have special significance to the Sudan. This external factor is elaborated in section 9.3.

*The political-ideological factors: How the agonised Sudanese undermined the unity of the Nile valley*

After its invasion of the Sudan in 1820, Egypt initiated a new bond with riverain northern Sudanese (for details see Warburg 2000:74-6) and aspired for a wider unity which also involved other communities upstream. However, as the Nile Basin embraces different races, encompassing hundreds of ethnic groups, there was a need for a more accommodative claim, which could help build a bloc against other Nile contestants. An Islamic, pseudo-Arabist agglomerating claim has portrayed such "Unity of the Nile Valley" among heterogeneous groups on the banks of the River Nile as against the "homogenous" Christian Ethiopian highlanders.

Yet this claim of wider unity either shrank and confined the *oneness* to the *valley's* "imagined community", i.e. to *Egypt* and *northern Sudan*, or it considered the domains outside them (in upstream riparians, save Ethiopia) as not being peopled, or at least peopled with groups that had nothing to do with the Nile. For it was soon after Sudan gained its independence that a partial valley (i.e. Egypt and northern Sudan) was conceived, cutting off southern Sudanese from the "one people" of the Nile Valley. As noted earlier, the "united front", which bound Egypt and Sudan together, as an outcome of the 1959 Nile Waters Agreement, reflected a commitment far beyond mere good neighbourliness. However, these ideological ties disguised real dynamics on the ground, which seemed to question the "imagined community" and to jeopardise the dream of unity altogether.

Not fully regimented by the ideology of "Unity of the Nile Valley", Sudan's "independence forces" called for a Sudan independent of Egypt and drove it towards the south, to its historic cultural milieu in contrast to those opting for union with Egypt – the "Unionist Forces" – driving the Sudan towards the Mediterranean (for details see Haj Hamad 1980, Waterbury 1979:49). At the core of the independence forces was the Umma Party, which was historically 'premised on an anti-Egyptian stance' (Mohamed Salih 2001:80) and backed by western Sudanese. It stood as the main rival to the unionists. The Umma opposition to unity with Egypt was a position favoured by the British (Sikainga 2000:33) and endorsed by southern Sudanese. The Black Bloc, comprising the pre-independence southern Sudanese movement, developed closer relations with the Umma Party for the latter's support for the principle of "Sudan for the Sudanese" (Sikainga 2000:33). Southern Sudanese were clearly anti-unity with Egypt – they even rejected alliances with fellow southerners, who were ex-soldiers, simply because they suspected them to hold pro-Egyptian views (Sikainga 2000:34). In other words, popular support in the NRZ and upstream RZ made for a large bloc allied with the independence movement counteracting the unionists, with the latter largely from the downstream RZ.

In connection with the independence movement it is important to point out that intellectually and ideologically the northern Sudanese sought an Afro-Arab identity, indicating that this movement sought an independent identity for the Sudan. Starting and flourishing in the 1930s, Al-Fajr School espoused loyalty to a form of "Sudanism" or "Sudanese-ness" (Sharkey 1998:175, see also Ibrahim 1987:15-7). These intellectual and ideological currents imply that the Sudanese have an image about themselves different from the hegemonic one associated with Egypt.

Besides such intellectual and ideological currents, objective conditions have increasingly dissolved the *valley's* "imagined community". The above-mentioned schools reflected a new necessity, namely nation-building. The nation-building project in the Sudan, on the one hand, and the necessity to boost nationalistic rhetoric for new regime legitimacy in Egypt, on the other hand, made unity of the two countries far from achievable; however, it was nonetheless

an important rhetorical engagement. In the 1950s the drive towards unity with Egypt was especially fierce among the Sudanese Unionists, stimulated as they were by the hyper-rhetorical Arab nationalism which by then had started to peak. Towards the time of independence in 1956, Egyptian leadership felt, erroneously, that the Sudanese unionists would undoubtedly declare unity with Egypt. In practice, however, things worked out differently and frustration of the erstwhile petty-colonisers of Sudan ran high. Dynamics in the Sudan, particularly in relation to the pressure of the independence movement, left no room for manoeuvre on the side of the unionist government. The unionists who won the majority of seats in 1954 (Haj Hamad 1999:25) chose to declare independence of the Sudan from within parliament, hence putting aside the idea of unity with Egypt.

Ismail al-Azhari, Sudan's first prime minister and until 1954 one of Egypt's closest allies, demanded a revision of the 1929 agreement with regard to the respective shares of the two countries of Nile waters (Warburg 2000:77). Following the unionist government and maintaining the striving for changing the 1929 agreement, was the Umma-led coalition, which ruled the country until the first military coup on 17 November 1958. During this period, the Umma-led coalition effectively undermined the appeal to unity with Egypt. Following independence, 'Under Khalil the Sudan rejected President Nasser's Arab unity policy as well as his notion of the so-called "Positive Neutralit[y]". Instead he supported the Eisenhower Doctrine and allied the Sudan with the United States' (Warburg 2000:84). Professional army officers ruling the country between 1958 and 1964, though intersecting with Egypt in advocating Arabicisation and Islamisation had, probably, lessened the advocacy of the unionists too. The development policies designed and implemented by the authoritarian regimes in both Egypt and the Sudan contributed to *de-valleying* the valley through two processes. One was the process of vast environmental degradation that these policies caused, which we shall discuss separately below as the cause of the merging of the RZ and the NRZ. The other was a process leading to the construction of the High Dam in Egypt defined by national security concerns and geopolitical changes in the Nile Basin and resulting in widening the geographical distance between the peopled regions in the two countries (see Warburg 2000:75, Osman 1984, Abulgasim 2000, Holt and Daly 1979). Egypt to build its High Dam inside its borders has already separated it from the Sudan, due to the large dislocation of the border communities – the almost total depopulation of a large region. The Nubian communities in northern Sudan were dislocated to eastern Sudan; a far distance from their homeland. Thus, they were cut-off both geographically and culturally from their kin inside the Egyptian border. The latter were removed far distances inside Egypt. The High Dam in this respect has not only blocked the natural flow of water, but also the natural communication among the Nubians – the bridge for cultural communication between the Sudan and Egypt. The outcome of this authoritarian development was the agonising of larger segments of the Nubians, whose ancestral homeland is inundated forever, as detailed elsewhere (El Zain

forthcoming(b)). The regaining of democracy by the mid-1960s and the Umma-led coalition probably lessened the zeal for unity even further.

The most important thing in relation to political dynamics in the 1960s was that the Sudanese parties, both “unionists” and those under the umbrella of the “independence movement” increasingly realised the need for an independent Sudanese politics. The unionists permanently became the second party, while the independence movement, even when its largest party split, came to form and lead coalition governments. During this period, the unionists maintained their geographical/electoral constituencies, as the population distribution remained largely the same, while the Umma made slight gains at the expense of regional parties. The two main parties, i.e., the Umma Party and the Democratic Unionist Party (DUP), came to realise their collective gains by maintaining democracy – an institutional choice that put their political orientation at odds with that of Egypt. More precisely, the nature of the following of these two parties put them at odds with Egypt’s interests. The two parties are “agrarian parties”<sup>5</sup> *par excellence*. The supporters of the Umma Party (Ansar) and the People’s Democratic Party (PDP) (Khatmiya) came ‘mostly from farmers, tenants, and herdsmen’ (Ahmed 1986:18). A policy by coalitions of these parties to expand the irrigated agriculture sub-sector was only natural, and this was conceived by Egypt as jeopardising its interests (we shall come to this later in sub-section 9.2.3). Egypt needed another dictator to harmonise its interests with the Sudan. Nimeiri, who led the 1969 coup, was the one who established stronger relations with Egypt. In fact, as noted earlier, Sudan under Nimeiri started to have stronger relations with the Gulf states.

Naturally, Egypt and, for that matter, other Arab countries overlooked or consciously undermined the Sudanese “minorities” rights to their resources. The south in particular, has been victim to religious, cultural, economic, and geopolitical interests that came together to produce tough and uncompromising government policy (Suliman 2000:152-3), while the government has become totally dependent on the Arabs to win the lengthy destructive civil war. The south was effectively further demonised. The valley, which was previously portrayed as involving the groups farther to the south, shrank and southern Sudanese were equalised with the “old enemy” – the Christian highlanders of Ethiopia – if not a more feared enemy. ‘The weak link in the chain of regional security as seen from Cairo and Khartoum is primarily southern Sudan, and secondarily, Ethiopia’ (Waterbury 1979:78). In its alliance with Egypt, northern Sudan should beware of the danger coming from its (non-recognised) African part. ‘It is sincerely feared that if hostile forces were somehow able to exploit regional dissidence in the Sudan, the downstream water supply could be jeopardized and the Sudanese

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5. Agrarian parties, according to Electionworld.org (2004), are defined ‘as parties promoting the interests of farmers and peasants.’ In the context of the Sudan the terms “agrarian parties” will be used to refer to the parties backed largely by farmers and pastoralists.

and Egyptian regimes threatened' (Waterbury 1979:78, Al-Sa'oori 2003:153). To this extent, southern Sudan is portrayed as irreconcilable and, hence, northern Sudan is made to fear its own other half, while relying on its former coloniser to maintain security.

It is worth noting that the Arab countries, especially Egypt and Libya, opposed the Addis Ababa Agreement (Suliman 2000:168) which offered the only 10 years of peace to the country. Even current peace negotiations to end the war that has claimed the lives of over 2 million people have been subject to the whims of the Arab countries. The so-called Joint Libyan-Egyptian Initiative, though being more inclusive in structure, steered away from the most contentious issues of the conflict, namely self-determination for the south and separating state from religion (Goldsmith *et al.* 2002:194). In fact, Egypt is maintaining its old stance, by which it since the 1930s resisted, together with the northern Sudanese, the southern Sudan detachment policy imposed by Britain (Goldsmith *et al.* 2002:190). According to Patrick Seale 'Egypt has always opposed self-determination for southern Sudan, perhaps fearing that an independent state in the south might dam, divert or make large use of the waters of the White Nile, which Egypt considers its strategic water reservoir. Egypt wants more water from the White Nile' (*Gulf News* 26 July 2002). Even when the Sudanese foes were about to sign a peace deal, they needed to make frequent assurances that peace in Sudan would not deny Egypt the flow of Nile water (see *Al-Sahafa* Archive No.3, *Al-Sahafa* 02 October 2004). Egypt's emphasis and opposition to self-determination of the south, as in its recent stance, has angered some segments of Sudanese civil society.<sup>6</sup>

However, authoritarian deals of imposing unity or integration by the two dictatorships in Egypt and the Sudan would not go smoothly and were often aborted by the power of the marginalised groups. They not only failed, in fact, they proved counter-productive, as they generated resentment.

The memory of "resource capture" and "ecological marginalisation" would, in fact, intensify resistance instead of facilitating large-scale water augmentation projects and population resettlements, especially if this were imposed on host communities. For the southern Sudanese, the Integration, in association with the Jonglei project, was conceived of as a threat to their resources, so they opposed it and made Jonglei among the first targets for attack by the SPLA (Chapter 4). As the "valley ideology" had rendered western and eastern Sudan irrelevant, groups in those regions followed suit with the south and adopted its tactics and strategies to resist the hegemony of groups in the valley. Rebel movements in Darfur, i.e.

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6. Southern Women Group for Peace (SWGPF), as part of an umbrella coalition of political parties, called, in its Communiqué of 25th of July 2003, 'upon the International Community to continue to support the Sudan Peace Process, and to restrain Egypt from unduly interfering in the internal affairs of Sudan by its opposition to the right of the people of Southern Sudan to self-determination in both the Declaration of Principles (DOP) and the Machakos Protocol.'

the SLA/M and JEM, currently fighting with the central government (Chapter 4) often expressed a shared cause.

In the 1990s unity or integration between the Sudan and Egypt became a more distant and complicated objective and the two countries needed to look for another formula. Besides the tensions created by the Islamists and the historic tensions with the anti-Egyptian groups, two factors complicated relations between the states and made unity unlikely, especially with its component of resettling large numbers of Egyptians in the Sudan or giving them lands for large-scale investment. These were present in a security imperative and a political development that could be advanced to explain the complexity.

The security imperative was associated with the tense relations that Egypt developed with every elected government in the Sudan. However, Egypt's occupation of the Halayib Triangle in north-eastern Sudan in 1992, which continues until today, seems to represent the proverbial straw that broke the camel's back in connection with hosting a large number of Egyptians in northern Sudan. In other words, the resettlement of large numbers of Egyptians in northern Sudan would perhaps represent a high risk to Sudan's national security should Egypt maintain its old geopolitical view of Sudan and embark on another adventure against Sudan or should it use Egyptian settlers to pressure Sudan's communities and democratically elected governments.

The political factor is manifest in the current hyper-politicisation in the Sudan and high-strung sensitivities associated with resources. Thus, as an old agenda item, resettling large numbers of Egyptians inside the Sudan, as part of a unity deal, is likely to invite strife and instability in the host areas in as far as it is imposed by dictatorships in both countries, which historically neglected the Sudanese people's demands. Signs of this strife have already surfaced further north in the Sudan as detailed below in section 9.2.4.

Besides the impact of "resource capture" and, therefore, the reaction of the old and recently ecologically marginalised communities, the arid RZ became the new opportunity niche in northern Sudan (Chapter 8), which certainly contributed to re-defining relationships with Egypt, especially in association with Egyptians' strive to own lands therein. All these developments contributed to deflate the ideology of "Unity of the Nile Valley" – they made the Nile Valley less of a strong bond.

*Merging the RZ and the NRZ/upstream RZ –or, bringing the agonised into the seat of power*

The other process of de-valleying the valley was a politically and environmentally driven process, which resulted in narrowing the distance, or, to be more precise, merging the RZ and the NRZ in the Sudan. This resulted in the dissolution of the development discourse in the Sudan, which for a long time bestowed legitimacy on the riverain elite, and its replacement by the ethnic/religious discourse (Chapter 4) accompanied by erratic behaviour of the Sudanese leadership.

If southern Sudan and Ethiopia are perceived as the old enemies in Egypt's imagery, a threat from northern Sudan was almost unthinkable given the taming of the Sudan along the Egyptian culture and policy that Niemiri's long reign had brought about. Yet one of the most serious threats to Egypt now comes from northern Sudan – Egypt's presumed kin. Pressures and political gain resulting from environmental scarcity have been the main causes behind this state of affairs.

The grand alliance of the *valley* seems, at least partly, to have contributed to creating the germs of its total dissolution. This operates first, through its effective ecological marginalisation of the NRZ and upstream RZ groups that now make up the major population-political contours in the downstream RZ and, second, as a natural outcome of the first, by breeding an estranged ideology, i.e. Islamism, that sets the two sides of the *valley* on incompatible paths discourse-wise.

The long sustained map of population distribution strengthened the "imagined community" along the Nile's banks and helped establish its distinguished identity in contrast to "others" who did not share the same relation to the river. Certainly, the new population contours described in Chapter 6 and Chapter 7 made the *valley* in the Sudan more heterogeneous, demographically and culturally, than ever before. Modern history of the Nile Valley has set open the boundaries of the historic imagined community to the expansion of empires and appearance of nation-states. It annexed to the *valley* the large territories of the "non-*valley*", which were to become the Republic of Sudan. This evolution put the riverain peasantry in the Sudan in contradiction with the pastoralists and rainfed farmers and, in the final analysis, translated to bias to irrigated agriculture in the RZ versus rainfed in the NRZ, urban riverain versus rural riverain and non-riverain groups.

The population of the annexed NRZ and upstream RZ were subjected to severe processes of impoverishment caused by persistent "resource capture" and "ecological marginalisation" and triggered by drought and civil war. They have now moved into the *valley* (the downstream RZ) on the basis of citizenship offered by the nation-state, through serious struggle (Chapter 8) and facilitated by modern transportation systems. According to Abdel Rahman (1991:247), '[T]he introduction of cheap public transport has reduced the deterrent effect of distance and encouraged migration from remote regions, particularly the southern and western provinces. Up to 1958 there was no railway link between Khartoum and the southern and Darfur Regions.' Before 1962, migrants from Darfur who reached Greater Khartoum by river or road, which were both expensive and time consuming, constituted only 7.9 per cent, while their proportion increased to 15.7 per cent of the total number of migrants in 1983 (Abdel Rahman 1991:247). Environmental scarcity and civil war (Chapter 4) brought into the *valley* those groups who were not included in the historical *valley's* imagined community and its advocated unity; who are not only culturally different, but who were also new contestants for the *valley's* meagre resources.

The germs of change in the population contours and, necessarily of reorganisation of power relations associated with it, which would ultimately question the

“old hydropolitical regime” of the Nile were there much earlier. It was probably during the 1980s that they began to emerge aggressively. In fact, the decade before the 1980s witnessed significant changes in power relations that may have been instrumental in paving the ground for what would follow in the 1980s. Tony Barnett (1988:5-6) argues that the period 1969-83, unlike the post-independence years preceding it, ‘marked a break in the relative balance of civilian and military rule in the Sudan’. A faction of the middle class, namely under the leadership of the Muslim Brothers movement, broke with the “rhetorically” asserted quest for democracy and wholeheartedly espoused a “despotic” political programme. Thus, in the period mentioned above ‘[t]here was a disjunction in the political and socio-economic spheres, with a complete change of emphasis and orientation, away from some kind of, albeit uneasy, social consensus in which big-landowners, tribal leaders, religious leaders, major merchants and urban notables ensured the stability of the state’ (Barnett 1988:6). Yet if we look closely into the new population-political contours, we notice that the power bloc is not only undergoing reorganisation; in fact it is witnessing a significant transformation and this is especially associated with the social effects of environmental scarcity. Where politics in the Sudan since independence has been predominantly a game of reshuffling positions among riverain elite (Harir 1993:22), it is clear now, given the current overwhelming identity politics, that under a fairly representative system of rule the chances that the riverain elite will be able to maintain the alliance with Egypt and monopoly of power are getting lesser. In other words, the new population-political contours mean the shrinking of the influence of certain groups within the Sudan, particularly groups in the downstream RZ. In this case, Egypt, which enjoyed the almost exclusive political support of a big group of population represented by the second largest political party in the Sudan – the DUP<sup>7</sup> – will likely be affected.

These new population contours have brought some radical changes, namely the demographic overrunning of the ruling elite by the marginalised groups and, related to this, the overrunning of the urban middle class by rural poor and the collapse of this class’ political programme. The most significant repercussion of this was that the state, under the Nimeiri regime, was compelled to “borrow” a new ideology, manifest in the antagonising political programme of the Muslim fundamentalists (or the Islamists). Elsewhere I have elaborated on how the mass displacement of populations provided the Islamists an opportunity to mobilise rural populations to pressure President Nimeiri to adopt their political programme (El Zain 2006a, 2006b, 2005).

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7. The DUP predominates in the whole Main Nile region north of Khartoum and in Khartoum Province (both embed a shared worldview with the Egyptians), as well as in eastern Sudan. While the populations of the Main Nile and eastern Sudan are relatively small, in Khartoum with its large population, the DUP adversaries now count for double its supporters.

By adopting Islamic laws and empowering the Islamists in the Sudan, Nimeiri contributed to replacing the open Arabist cause with its camouflaged, most compatible kin, i.e. Islamist fundamentalism. The implementation of Islamic laws in the Sudan set flames among frustrated masses in the Arab region, including Egypt that yet another success was being made after that of the Islamic revolution in Iran. The euphoria that had embossed the clients of this discourse was so feverish that another Mahdi was to bring to Islam its lost glory. With regard to Egypt, Nimeiri had implanted in the Sudan the type of Islam whose theoretical framework was originally developed in Egypt and is still swelling the minds of the youth in that country with the zealous ambition of creating an Islamist state therein.

President Nimeiri in the early 1980s, thus, planted what Egypt would understand only later, by the early 1990s, as a dangerous effect on its stability and national security. Despite these dangerous effects, Nimeiri remained a close friend of Egypt until the 6 April 1985 popular uprising ousted him. Politically live or dead, Nimeiri seemed to have become a source of trouble for Egypt. After the resounding collapse of his regime, Nimeiri took refuge in Egypt. During the courageous days of the sudden breeze of freedom, following the 6 April 1985 popular uprising, Sudan's relations with Egypt became sour, as the latter refused to hand over the dictator for trial in Khartoum. Despite requests made by the transitional government (1985-86) to Egypt to deport Nimeiri to Khartoum, Egypt refused. During this period, Egyptian television series were banned from Sudan's national television and the transitional government was utterly critical of Egypt. The refusal to hand over Nimeiri was then used as a pretext for an effective Sudanese media campaign against Egypt.

Following the transitional government, the democratic regime that assumed power in April 1986 had its tensions with Egypt. The then Sudanese Prime Minister Sadiq Al-Mahdi – leader of the Umma Party and grandson of the nineteenth-century Mahdi, who bitterly defeated and evacuated the troops of Khedivate Egypt from the Sudan – accused President Mubarak of Egypt of exercising the same defunct Khedivism over the Sudan. In our understanding, this carried a symbolic message that was hard for Egypt to digest – it staged the ghost of Mahdism. It was then not surprising that it was Al-Mahdi's government that abolished the Integration Agreement (Warburg 2000:81), prompting Egypt to embark on its old strategy of defaming the democratically elected leadership in the Sudan and engaging in preparation for a sympathising army officer to effect a military coup. 'Irritation with Sadiq al-Mahdi's policies made Cairo the first to recognize Colonel Omer Hassan al-Bashir when he overthrew the Sudan's democratically elected government in a military coup, on 30 June 1989' (Warburg 2000:81).

Nonetheless, the soils of the Sudan have yet to grow a thorn more irritating to Egypt than the rhetorical attacks of the grandson of the Mahdi. 'President Mubarak hoped, *erroneously* as it transpired, that the Bashir regime would soon resume the Sudan's cordial relations with Egypt' (Warburg 2000:81, italics added). In fact, it took more than a year before the Egyptians would realise that they had backed the

wrong coup – it had become overt that the leaders of the coup were not pro-Egypt as the Egyptians thought; they were Islamists, cadres of the NIF in Sudan’s national army. ‘Bashir’s government soon became the most hostile Sudanese regime ever faced by Egypt since Sudan became independent on January 1956’ (Warburg 2000:81-82, Swain 1997:683). This thorn of Sudanese Islamists was originally watered by ideas from Egyptian ideologues and found a precedence initiated by President Nimeiri, the close friend of Egypt as noted above. The Sudanese disciples of Hassan al-Banna – an Egyptian and founder of the Muslim Brothers movement – aspired to annex Egypt to the domain of influence of an Islamic empire founded in the Sudan. The ingredients used for decades to justify the bonds of sisterhood between the Sudan and Egypt had thus now, following the NIF 1989 coup, bred the causes of nausea and the “sisters” were at odds: the theocrats of Khartoum versus the “secularists” of Cairo.

In light of this, the tensions between the Sudan and Egypt in recent years can be attributed largely to Egypt’s significant loss of sympathisers in positions of decision-making in the Sudan, resulting from the condition of environmental scarcity. The current situation in which coming into the RZ are people from western Sudan (the electoral base for the Umma Party) and people from southern Sudan (who always looked suspiciously at northern Sudan’s relation with Egypt) gives more weight to the southward driving forces. While people from southern Sudan have their own tensions with Egypt, those from western Sudan were effectively mobilised by the NIF in the 1980s and 1990s by way of inheriting the supporters of the Umma Party. Sidahmed Khalifa, the editor of the *Alwatan* newspaper, sees that the National Islamic Front ‘had built its popular glory, in the past and after it has seized power, on the educated descendants of the Ansar and supporters of the Umma Party in western Sudan’ (*Alwatan*, No. 175, 6 May 2001). Strategically, what Nimeiri did should have annoyed his closest ally, i.e. Egypt. Striving to maintain his shaking regime, Nimeiri resorted to the Islamists; in fact, he initiated what should have appeared in the eyes of Egypt to be another wave of Mahdism – the most dreadful experience in the history of Egypt’s relations with the Sudan. Since the mid-1980s, as it proved, Islamist leader, Turabi, renovated Mahdism and in the late twentieth century he effectively fought his own brand of nineteenth-century battles with Egypt. Turabi relied heavily on supporters of the Umma Party or children of the Mahdist Ansar, as noted above. Thus, western Sudanese people were mobilised not only to achieve the NIF’s fundamentalist ambitions at the national level, but also to export its “revolution” to Egypt.

Following the coup of June 1989, the Islamists resumed (or reinforced) the laws implemented by Nimeiri dictatorship and waged their “Mahdist” war on Egypt on similar lines with the nineteenth century Mahdist strategies, i.e. first rid the Sudan of the “Turks” and then keep irritating them at home. Aroused by the support he gained, Turabi, the ideologue of the NIF regime, put himself in the shoes of the nineteenth century Mahdi, who not only kicked the Turks, rulers of Egypt, out of the Sudan, but also wished to *Mahdise* Egypt. The first years of the

NIF reign witnessed the effective uprooting of Egypt's influence in the Sudan. This trend of decreasing Egyptian influence began during the transitional government (1985-86). However, the NIF indiscriminately targeted every emanation of Egypt in the Sudan. These included the closing of the Egyptian Consulate, the Sudanisation of the Khartoum branch of Cairo University, the deportation of Egyptian personnel located at Al-Shajara, and confiscation of 20 Egyptian irrigation works and residences in Khartoum (see *Sudan Update* 01 June 1999). Then came the mission of *Mahdising* Egypt. For Turabi, 'Egypt is today experiencing a drought in faith and religion... [but] Allah wants Islam to be *revived from Sudan and flow along with the waters of the Nile* to purge Egypt from obscenity' (cited in Warburg 2000:74, square brackets original, italics added). For historians familiar with the threats of nineteenth century Mahdism, these words sounded very familiar. Egypt's fears then became enormous.

Egypt's influence in the Sudan significantly decreased as the NIF's Inqaz regime hit hard against Egyptian interests. The *objective* population contours created by environmental scarcity generated the *subjective* population-political contours by amassing supporters behind the NIF leadership. While the change of the population-political map meant the change of the power bloc in the Sudan (which had maintained a certain balance of power at the national level and influenced a certain line of foreign policy), it also meant the shrinking of the influence of certain regions within the Sudan.

Except the DUP, virtually there was no committed political ally of Egypt in the Sudan, as we shall see below, and even the DUP was experiencing some radical transformations. The weightier population heterogeneity in northern Sudan had by now made it too difficult for the country to effect a unity with Egypt founded on (constructed) ethnic brotherhood. Dominance of the DUP in the low-populated region north of Khartoum and in eastern Sudan remained intact until mass displacement took place. The DUP is currently losing its previous weight in these regions because of immigration and settlement of IDPs in larger numbers but also because of the out-migration of original inhabitants of these regions. Politically speaking, the domain of the DUP is shrinking. While the DUP may continue to dominate in the Main Nile and eastern Sudan with their relatively smaller population, it is unlikely to continue maintaining its dominance in Khartoum Province. This is because the immigrants and IDPs who came from constituencies dominated by other political parties and who became settlers in Khartoum are now twice as large as the supporters of the DUP in the same town. One neighbourhood in the tripartite capital, i.e. Umm Badda (now designated as a province) has a population larger than the combined population of the Northern and River Nile states (*Al-Sahafa* 16 April 2001). These two states, whose population almost exclusively supports DUP, were four times bigger than Khartoum in terms of population in the 1960s. By 2003, their population had fallen to less than a third of Khartoum's (Table 7.13).

The changing nature of the ethnic mix in Khartoum probably shows more clearly the chances of the DUP, which appeals to northern “Arab” Sudanese more than its appeal to other communities elsewhere in the country. According to Hassan Mekki Mohammed (2001a:20-1), Khartoum witnessed dramatic change in its ethnic diversity, with the city rapidly taking on an African identity rather than its previous Arab outlook. He states, ‘Out of the 545,933 population of the 1955 census, about 372,596 were people of Arabic and Nubian origin, mainly coming from the Northern part of the country, forming approximately 70% of the population.’ Referring to the same census, he cites the number of people from western Sudan and probably West Africa at 14,935 and people from southern Sudan at 10,833. Western and southern Sudanese, according to these figures, respectively formed 3 per cent and 2 per cent of the total population of Khartoum in 1955. In 2001, the number of people from western and southern Sudan reached 4 million out of Khartoum’s 6.9 million (Mohammed 2001a:21, see also 2004), making up 58 per cent of the city’s total population. This indicates, according to Mohammed (2001a:21), ‘that the city has within 46 years, witnessed a great diversion to an African [outlook] and entity’. In Khartoum the groups that would, largely, provide support for DUP represent 42 per cent of the total population, whereas in 1956 they were 95 per cent predominantly riverain Sudanese.

In future elections, even if the DUP party wins back all its previous constituencies in Khartoum, it would gain only a marginal or, at best, a small portion of the overwhelmingly expanding city. It is probable however that the DUP will make no gains in its previous constituencies, as the latter have become subject to a mixture of “ethnic” dwellers with ambitions for political power on their own. Regional elite in eastern Sudan, previously supporters of the DUP, have now spilled blood in their war with the NIF government for the sake of their autonomy and their own righteous political participation.

The DUP underwent the negative impact of the destruction the NIF regime inflicted on the Sudanese economy. This destruction hit the foundation of a large segment of the DUP membership. Egypt’s loss could also be seen in the out-migration of the urban middle class of northern Sudanese who largely supported the DUP, escaping political persecution. The two parties, which were merged to make the DUP, i.e. the People’s Democratic Party (PDP) and the National Unionist Party (NUP), have their bulk of urban supporters from the middle class. According to Ahmed (1986:18),

[T]he PDP had most of the lower level state functionaries as well as a substantial share of the commercial bourgeoisie. The National Unionist Party (NUP) found its support among intellectuals who were partly middle level bureaucrats and lower level state functionaries, the bulk of the functionaries in general, and a substantial percentage of the commercial bourgeoisie.

Sacked from their jobs and terrified by torture and humiliation, which characterized the Islamists' rule in Sudan, a large segment preferred voluntary exile and scattered to Europe, the United States, Canada, and several other places in the world. Most of them, however, during the long reign of the NIF, have come to terms with their new environments and acquired the citizenship in the host countries (for details see El Zain 2006a).

### 9.2.3 Sudan's internal hydro politics and augmenting water supply to Egypt

This sub-section considers two aspects of internal hydro politics which cause a clear contradiction and challenge the presumed serene relationship with Egypt. These are southern Sudan's need for water for rehabilitation, resettlement, and reconstruction and the need of agrarian parties in northern Sudan to maintain their integrity, therefore, investment in irrigated agriculture.

#### *The fifth player in Nile hydro politics and necessities of resettlement and rehabilitation*

This part of the sub-section argues that environmental scarcity has actually made the (wetter) upstream RZ of southern Sudan needy for irrigation water and, therefore, if the swamps therein were developed, this region would have a decisive say on the water quotas. It has the *de facto* power to do so and potentially has the *de jure* power to secure its rights in the future. John Waterbury (2002) sees in southern Sudan an important player in Nile hydro politics and he considers it the "fifth player", together with Egypt, Ethiopia, northern Sudan, and Uganda. While the heat of debate on the Blue Nile front is almost exclusively international (as we shall see in Section 9.3), that of the White Nile combines both national and international issues, as it collides southern Sudan with northern Sudan and spills onto Sudan's relations with Egypt. The Jonglei Canal, which should have drained the waters of the swamps into the White Nile, has since its conception invoked a persistent protest on the side of the southern Sudanese.

The Jonglei was one of the earliest projects to be conceived. Though the idea dates from 1904, implementation remained a contested issue in connection with British policies of the time (see Tvedt 1993). 'The governments of Sudan and Egypt established the Jonglei Investigation Team in 1948 to study the impact of the proposed canal. The study indicated that the canal would have severe impacts on the livelihoods of local communities populating the region, including the Nuer, Dinka and Shilluk, as well as on the ecology of the Sudd Swamp upon which local livelihoods were based' (Goldsmith *et al.* 2002:204). A conducive political environment with a regime maintaining close ties to Egypt, zealous espousal of Arab nationalism, and economic necessities brought the Jonglei to implementation stage. 'By 1973, Sudan had exhausted its share of the Nile waters yet required more water for irrigation projects in the mid-regions of the country. The Jonglei Canal project was subsequently launched, without sufficient consid-

eration of the likely negative impacts identified by the Jonglei Investigation Team' (Goldsmith *et al.* 2002:204).

The project, which has been at the core of Sudan's relations with Egypt, has become increasingly difficult to attain, primarily because of the ecological marginalisation it generates. The economic calamities the Jonglei Canal might generate (see de Jong-Boon 1990), being of immediate effect, have been a cause for mobilisation among southern Sudanese as the project was considered an Egyptian re-colonisation measure, or an Arab colonisation (to include both northern Sudan and Egypt). Civil war with its battleground being southern Sudan was being 'redefined...as an "Arab colonial war"' (*The Tufts Daily* 15 March 2004). It was, therefore, incorporated as a component of the ethnic question that contributed to fuelling civil war in southern Sudan (Hultin 1995:47), adding a water component to the ideology of the armed rebellion there. The Jonglei Canal 'became part of the increasing social, economic and political tensions that started the current conflict in south Sudan. Jonglei means "alien god" in Dinka. To many southerners, this "alien god" was a foreign promise of development imposed upon them, and thus unacceptable' (Goldsmith *et al.* 2002:204). The Jonglei became truly an "alien god", being the representation of authoritarian development, in which, according to Suliman (2000:168), the government ignored the opinion of the local population when it conceived the project. 'The stalled Jonglei Canal project in the Sudan is an example of a water resource development project that was mooted and initiated without sufficient consultation and sharing of information with local communities' (Goldsmith *et al.* 2002:204). One more factor adding to the political tension was the perceived conspiracy to change the population map in connection with the Jonglei (for details see Suliman 2000:177), which became more sensitive after the signing in 1982 of the Integration Agreement, which provided freedom of movement for people and ownership of land.

The Jonglei is almost certainly a no-go as originally conceived in 1974, due to the fierce resistance of the inhabitants and internationally recognised grief caused by the strive to control the region. The "open frontier" in which Jonglei lies is now blocked. While in the past it was the *Sudd* which blocked Islam from reaching into the south, now it is the Islamists' interpretation of Islam, which has blocked the effective incorporation of the *Sudd* region into the national political domain and, therefore, in national economy and hydrological planning. The technically reachable water of the swamps is now politically/ideologically unreachable. The efforts to find a resolution for the 21-year civil war over natural resources made it inevitable for northern Sudan to seek a new arrangement with southern Sudan. The landmark Machakos Protocol signed 20 July 2002 by the government of Sudan and the SPLM/A (Goldsmith *et al.* 2002:194) concluded this development. 'Under the deal, the parties agreed that a referendum for the population of southern Sudan – the scene of fierce fighting between Khartoum and the SPLM/A since 1983 – be conducted in six years' time to choose between secession or to remain within a united Sudan' (Goldsmith *et al.* 2002:194). Thus,

the change in the population map in the 1980s and 1990s added more fuel to the tense relations between southern Sudan and northern Sudan by escalating the “ethnic” (El Zain 2006e) – more pressure for more water and, therefore, made it difficult for southern Sudan to accept the old rule formula and allow for the resumption of the Jonglei Canal. The blocking of the “open frontier” by southern Sudanese warriors is now receiving international recognition, namely in the internationally supported peace negotiations.

The Meroe Dam is a strategic move meant to account for all possibilities, including failure to resume the Jonglei Canal, cessation of southern Sudan and use of southern Sudan for its waters while continuing in a united Sudan, which would preclude the northern Sudan’s agricultural lobby from continuing to expand irrigated agriculture. This is also to create realities on the ground, but at the same time is clearly the result of the agricultural lobby’s desire to redeploy its agribusiness capital to the safer north under the pressure of ethnic discourse and claims of ancestors’ lands.

*Necessity for southern Sudan to develop water constructions*

Rehabilitation of southern Sudan is not a luxury, nor is it a discourse for accumulating political and symbolic capital. Rather, it is necessary to curb the trends already in place, which if left unchecked will render barren lands of large habitats in the south and furthers the collapse of communities’ cultural and social integrity.

Rehabilitation in this regard is not driven only by political will among the actors involved; but moreover, it is a security imperative, necessary for both the integrity of a new state in the south as well as for a united Sudan. It also has an international humanitarian dimension, where the tragedy of war-displaced and famine-hit groups in southern Sudan have entered the limelight of international media and engaged several actors including religious NGOs. Also, following the 11 September 2001 terrorist attacks on the United States, unstable regions and unpopular regimes are conceived of as providing safe heavens for terrorists. Should it achieve peace and stability in unity, Sudan would start serious development and rehabilitation strategies, with the devastated south toping all regions. Thus, the Jonglei Canal, if reconsidered at all in its 1970s form, is likely to be reconceived to benefit southern Sudan in the first place and northern Sudan and, probably, Egypt only thereafter.

A precondition for the success of the Jonglei Canal – the carrier of all this water – is the continued integrity of the Sudan and cessation of all hostilities in southern Sudan (Elhance 1999:74). Around the mid-1980s, John Waterbury (1984:173) wrote,

Although southern Sudan is not a sovereign state, it is possible in a de facto sense that it might try to lay claim to water in its territory that might otherwise be siphoned off to northern Sudan and Egypt, even though at the present time it may not be able to use that water effectively (underline original).

The last 21 years have led southern Sudan to claim, at least, a *de facto* position – 80 per cent of southern Sudan’s territory is under SPLA control. Civil war in southern Sudan has already drawn the destiny of the Jonglei Canal project (Chapter 4). In a confederal or an independent state, the existing plan of the Jonglei Canal, being wholly in southern Sudan, might be radically transformed. At a minimum, legal and technical changes would be implied, which would affect the 1970s deal between the Sudan and Egypt. More importantly, in our view, a new state in southern Sudan has the potential to grow stronger and contest for more regional weight. In each of these cases, the bargaining mix of southern Sudan is increasing and it is likely to assert its agenda over that of northern Sudan and Egypt. An independent southern Sudan may contest both juridically and militarily for its share in Nile water.

Resistance of groups at the headwaters to centralised governments, thus, has clear repercussions for Sudan’s relationship with Egypt, therefore, for the Nile regime. On a regional scale this might create water scarcity and increase the importance of the Jonglei to the Sudan. However, the most significant impact is on relations between the Sudan and Egypt. Elhance (1999:65) argues that ‘if a union of Egypt and Sudan (or Egypt and northern Sudan) were to somehow come about in the future, hydropolitics of the Nile basin would change dramatically; but the very *real possibility* of the fragmentation of Sudan – into a predominantly Muslim north and a mostly Christian south – makes such a federation highly unlikely’ (italics added). This is because Egypt would not be interested in uniting with a northern Sudan that stands like Egypt as a consumer, while northern Sudan would find it more strategic to ally with Ethiopia. This is a totally different picture from that painted some decades back. At that time, it was argued that ‘a northern Sudan without the southern provinces would be ripe for absorption by her northern neighbors’ (Waterbury 1979:206). This means two arid countries (i.e. Egypt and northern Sudan) with no significant contribution to the Nile waters against an upstream inevitably set to increase its use of Nile waters. Yet it is this very water issue that makes northern Sudan “useless” for Egypt and that in itself might lead to a change in the Egyptian policy towards Sudan; a country which might soon break and, hence, strategically lose importance. Seemingly, environmental scarcity has made Sudan lose its charm for Egypt and, in that sense, made Egypt lose some of its importance for the Sudan.

*Possibility for southern Sudan to develop water constructions*

Receiving 50 per cent of the oil extracted recently from its region – worth US\$ 894.7 million in 2005 (*Sudan Tribune* 05 August 2006) – the leadership in southern Sudan could effect a steady development in irrigated agriculture with the abundant water resources of the region. Oil generates the possibility for the South to exploit its own resources through its own finances. Capital available to southern Sudan will increase with the gradual increase in the pumping of oil from

existing fields and from fields to be developed in the course of the six-year interim period and beyond that.

Additional funds have been pledged from several parties interested in signing the peace deals between the government and the SPLM, such as the European Union, the United States, Canada, and the Arab League. The former three have been involved in sponsoring the ongoing peace process for quite some time now and pledged to contribute to rehabilitation. The European Union earmarked 400 million for the rehabilitation of southern Sudan (*Sudan Tribune* 07 October 2003). The Arab League, through the Arab investment funds pledged US\$1.8 billion for infrastructure projects in the north and the south of Sudan (*Sudan Tribune* 20 February 2004a).

If anything, this will make the local and regional hydropolitics even more different from the designs of the “old hydropolitical regime” of the Nile. The discourse on the Jonglei has shifted from one predominated by the “political” to one dominated by the “economic”, as necessitated by the imperatives of rehabilitation and reconstruction. It imposes a moral responsibility for a united or two Sudans to lift the condition of vulnerability there and gives southern Sudan a strong position in negotiations.

#### *Agrarian parties and the necessity of state consolidation in the Sudan*

The aspect of internal hydropolitics highlights the contradiction in internal politics between military and democratic regimes, the latter of which involves largely coalitions of traditional parties. The democratic regimes are predominantly backed by farmers and pastoralists who naturally would continue to support such regimes if they provide for their respective sectors. Interests represented by traditional parties seem at odds with those of Egypt. We shall approach this by posing the question of why the unionists, under the leadership of al-Azhari, gave up the idea of uniting with Egypt when they could actually have concluded it during their reign in the 1950s. To answer this requires us to dig out some layers in the relationship between the Sudan and Egypt.

In our understanding, the explanatory factors reside in a contrast between the military governments, which were pro-Egypt and largely backed by the *urban* middle class, on the one hand, and the democratically elected *agrarian* traditional parties on the other. While the supporters of secular parties and military regimes came largely from the urban middle class, the traditional parties were largely supported by rural populations, including the rural elite, as well as by business class in urban areas. Ahmed (1986: 18) states, ‘The Umma Party (Ansar) and the People’s Democratic Party (PDP) (Khatmiya) generated their support on the basis of religious affiliation as well as class interest. In addition to their religious supporters who came from all classes (although *mostly from farmers, tenants and herdsman*), they depended on the bourgeoisie’ (italics added). As Table 9.1 suggests, the business class of the two parties controls 64 per cent of all agriculture

Table 9.1: Business class by party allegiance (%)

Party	All sectors	All agriculture	All mech. farming	Industry	Trade	Services
Umma	38	44	68	50	36	50
PDP	30	20	14	22	21	–
NUP	16	4	10	11	23	50
Pro-government	–	12	–	11	18	–
Undisclosed	16	20	8	6	2	–

Source: Ahmed (1986:19).

and 82 per cent of all mechanised farming. While “all agriculture” shows the significant role of this class, the higher share in mechanised farming indicates that the business class is entrenched in investing in crop production.

On the other hand, this may allow for a claim that Egyptian strategists have realised the agrarian nature of the two traditional parties and therefore were unprepared to give and take in the process that would bring them to power – democracy which would bring the demands of farmers and herders on board through these two parties. Not only for that matter, but also historically, the anti-unity Umma Party since 1950s has seemed to dominate the political scene of democracy in the Sudan by way of electoral support from its rural constituencies and financial support from its commercial bourgeoisie and building coalitions with southern Sudan’s political parties. The Umma controls the largest relative portion of the agrarian bourgeoisie. The military coups, which invariably toppled the Umma-led coalition governments,<sup>8</sup> appealed to the urban middle class (predominantly riverain, as noted earlier), thus, indirectly, stood in one camp with Egypt against the interests of the Sudanese peasantry. In this respect, what Egypt fears most is not the spread of liberal democratic values from its southern neighbour; rather the sort of demands these democratic values allow to surface in polity in the Sudan. A fair share in power for western Sudanese and other marginalised groups is possible only in a democratic milieu. The transition to democracy would make many communities own their resources and seek their development, including through irrigation. Related to this is what may appear an escalating tension between the original inhabitants and the government, whose policies so far continue to marginalise them.

Added to the interests of the traditional agrarian parties is the entrenched interests of the *nouveau riche* of the NIF party, which currently makes up the most influential segment of the agricultural lobby. As noted in Chapter 4, the Islamist agricultural lobby used every possible means to maintain its flourishing agricultural sector, including launching jihad campaigns to control the lands and waters of different regions of the Sudan. Given the expansive land resources accessible

8. The only case in which power was democratically passed according to ballot results happened to a Unionist government, not an Umma-led government. Umma-led coalitions were never left to go for the next election.

to this lobby and its practical experiences of immense fortunes it had accrued from these resources it is very natural that it become ambitious and therefore not only represents a non-compromising position towards Egypt but also antagonism towards it, when it senses the role of the latter in curbing this ambition.

In practical terms, it was the Sudan, especially under this ambitious agricultural lobby, that since the early 1950s appeared to represent the real threat to Egyptian interests. Sudan could seek over 40 billion m<sup>3</sup> and therefore, represented a more serious threat to Egypt than Ethiopia, which at the maximum could not go for more than 5 billion m<sup>3</sup> (for details see Waterbury 2002:129). 'The Sudan which consistently portrays itself *officially* as in harmony with Egypt's Nile policies and acquired rights, is, in fact, in profound structural contradiction with its northern neighbour' (Waterbury 2002:129). While the immediate structural conflict manifests as bipolar, involving Egypt and Ethiopia, the long-term structural conflict is between Egypt and the Sudan, though it is a more difficult conflict to reconcile (Waterbury 2002:148). It appears to be more or less inevitable. 'The Sudan's future is hostage to developing irrigated agriculture on a scale that Ethiopia can never contemplate' (Waterbury 2002:148). Sudan has around 85 million hectares of high-yield arable land, and is considered the third largest strategic food reservoir in the world (ACC 2005).

#### **9.2.4 Environmental scarcity, increased peopling of the arid RZ and escalating tensions**

Besides the historical yearning of the Nubians, the historical inhabitants of the expansive banks of the Nile, to return to their ancestral homeland including the border between the Sudan and Egypt, there are now some structural changes, which make their region more attractive for agricultural investors, and therefore a hotbed for conflicts. The necessity of resorting to Nile water is matched by the uncertainties everywhere in the country, which necessitates swift action to relieve the larger majority of the population from looming hunger (Chapter 8). At least in the short-term and medium-term, there is no "open frontier" from which resources can be tapped to relieve the Nile. Chapter 8 noted the intersection of the interests of the military and the Islamist agricultural lobby. In our view, the huge water construction works in the northern region are precisely made for the redeployment of the capital which now faced the realities of the blocking of the "open frontier". The transition to democracy will now add the agrarian parties to the Islamist agricultural lobby.

Egypt is supposed to mitigate its problems by relocating some of its population inside the Sudan. While the likelihood of resettling the Egyptians in the upstream RZ has now become extremely unlikely, and it has become impracticable in the central RZ because of the high population concentration therein, the only candidate region remains that north of Khartoum extending to Egyptian border. Recent water constructions (Chapter 8) might make the central part of this

arid zone, around the two bends of the Nile, more attractive for Egyptian settlement. However, this region is now turning into a zone of tempests, because of resource capture by the state of the private and “communal” land in this region and because of the seductive opportunities it offers. In other words, the region has become attractive for government, settlers, and investors. Communities inhabiting the arid RZ, including the Nubians of Wadi Halfa Province are showing resentment and they will almost certainly not give up their land rights for resettling foreigners, given that the winds of fortune are now blowing fervently over these lands. The Nubians for some time now have been trickling downstream, back to the ancestral lands from which they were evicted to construct the High Dam in the 1960s. In part, the new infrastructure has accelerated the return of the Nubians to their homeland, as some Nubians might find it lucrative to resume investing in irrigated agriculture combined with investment by the agribusiness class, which also involves some Nubians. In Chapter 8, we discussed how the blocking of the “open frontier” in the face of the expansion of the agricultural lobby has resulted in the redeployment of investment capital in the recently developed downstream RZ. Externally, in relation to Egypt, there is reason to claim that the Sudan is no longer an “open frontier” for its expansion, or more strictly, a potential refuge for resettling its excess population. The chance of resettlement of Egyptians is growing smaller, not only because of this resentment but also because of Sudan’s ability to develop independently.

Recently, resentments were aggravated by rumours that the government was selling to Egyptian companies 1.6 million *feddans* in the vicinity of Argin in Wadi Halfa Province (*Al-Sahafa* 19 July 2004) and the “Four Freedoms Agreement”, which was signed by the two countries 22 July 2004 (*Sudan Tribune* 23 July 2004). Deals between the governments of Sudan and Egypt will always be subject to questioning, suspicion, and damaging rumours, even if they may be advantageous to the Sudanese people. However, this year suspicion and resentment probably went beyond any official’s imagination, with the resurgence of the Kush Liberation Movement (KLM) in the downstream RZ, calling for armed resistance to the NIF.

The KLM emerged during the second half of 2004. In its lengthy programme, which featured on *Sudaneseonline* (02 September 2004), the movement identifies itself as one for the liberation of Nubia and the Sudan from the repression of monopolistic regimes, which the NIF regime represents, and the liberation of all Sudanese occupied territories from the Egyptian colonisation and the forces ally-ing with it. The document describes the history of Egyptian colonisation in Nubia and the modern Sudan as characterised by the strategy of swallowing up land in a plot-by-plot manner, and points out the dislocation of the Nubians from their lands in northern Sudan and their relocation far to the eastern border to please Egypt. The document notes that during the Nimeiri reign Egypt colonised the Halaiyb Triangle and then the Surra Triangle and finally the Nubian Basin, known as the Tushka project (*Sudaneseonline* 02 September 2004).

It is likely that the governments of Sudan and Egypt will continue to neglect the demands of the Nubians and go ahead with expropriating their homeland. However, this might be risky for regional peace and stability. This is because, as the case of the Sudan, in particular, shows, communal forces which rise up to defend their resource/homeland rights will hardly calm before their concerns are addressed. The case of the Sudan demonstrates that communal forces usually show resentment early on, then slumber, and then wake up sturdily to create a headache for governments and ultimately to twist the arm of these governments and compel them to reach a settlement, however, after huge damage in souls and property. If the Nubians take up arms, Egypt will, for the first time since Mahdism, witness troops and arms in its volatile south.

All the above shows that water scarcity in the Sudan has become real, and this state of affairs implies a new vision to overcome the multiplying bottlenecks. In Chapter 10, we shall see whether this condition of real scarcity, which Sudan is facing, would, in its deliberations with the Egypt and Ethiopia appear as the main cause behind the rising tide of cooperation in the form of the Nile Basin Initiative (Chapter 10). The following section argues that it is the internal hydropolitical concerns in the Sudan which actually push for strategic relationship with Ethiopia. More precisely, the failure of the agricultural lobby to conquer the South's "open frontier" and the possibility that the South use all of its resources to meet its own development and food security needs pushes Sudan squarely to form a special relationship with Ethiopia.

### **9.3 Impact of environmental scarcity on Sudan's relations with Ethiopia**

In contrast to strategic relations with Egypt, which remained "sisterly" warm and strong for more than half of the period since independence in 1956, Sudan's relations with Ethiopia were lukewarm if not tense most of the time. The Sudan's strong relations with Egypt made it, in the eyes of the Ethiopians, appear a country in permanent alliance with its utterly water-thirsty downstream neighbour, which had always feared and challenged Ethiopia's desire to develop its part of the Nile. Such a perceived strong and strategic relation with Egypt (the historical foe of Ethiopia) hampered Sudan's relations with Ethiopia. The detachment of the Sudan from the Sudanic belt and its positioning on the Nile axis (Chapter 6) affected its communication with neighbouring kingdoms, most importantly Ethiopia.

#### **9.3.1 Sudan's relations with Ethiopia since the early nineteenth century**

Historical prejudices and psychological barriers separated the Sudan from Ethiopia. The Turks (rulers of Egypt) who invaded the Sudan in 1820 and ruled over it until 1885 asserted new geopolitical realities in the region. Ethiopian rulers

viewed the territory of their western neighbour, now under the Turks, as source of imminent threats to their kingdom. Western Ethiopia was sacked by the Turks and by the mid-1870s Khedive Ismael, the ruler of Egypt and Sudan developed high ambitions to conquer the whole of Ethiopia. However, the Turks managed to control only limited coastal territories in addition to a territory in Ethiopia's north-west. Until his embarrassing defeats at Gundet (1875) and Gura (1876), the Khedive remained a permanent headache to the Ethiopian kings. The perceived siege by a Muslim military force with imperialistic ambitions set Ethiopia on the map as an island in an Islamic ocean and relations with its neighbours were thereafter accordingly perceived (see Zewde 1991:73).

During the Mahdia rule (1885-1898) the perception of siege was reinforced. The Mahdists with religious expansionist ambitions sacked north-western Abyssinia and contributed to the death of Emperor Yohannes. The death of the emperor, who had guarded Christianity from Muslim invaders, thus became a symbol of agony in the memory of the Ethiopians.

The "re-conquest" of the Sudan in 1898 posed the same old threats to Ethiopia, re-establishing the old geopolitical realities. The Sudan, which came under Condominium rule with the British being dominant, again became a source of irritation. The British in the Sudan not only dramatically changed the balance of powers in the region but also facilitated colonial role for Italy in Ethiopia. In their competition with the French, their ancestral rivals, the British, who themselves were unwilling to get involved in Ethiopia, wanted the Italians to do so (Zewde 1991:56). The invasion of northern Ethiopia established Sudan as the territory from which invaders come or otherwise where interests of colonial powers implied a minor role for Ethiopia. For more than a century, Ethiopia, thus, learned that the territory lying to its west was a laboratory for invasion plans or, at the minimum, alliances that would effectively undermine the role of Ethiopia and destabilise it. This frontier status of the border between the Sudan and Ethiopia left the region largely wilderness. The history of relations between the two countries had, probably, laid thorns in the way of any effective trade or cultural relations between them.

Following its independence in 1956, the Sudan was no better in relating to Ethiopia. Sudan was largely trapped in its nineteenth century-constructed geopolitical image in which Ethiopia remained a less important card. The Sudan's geopolitical self-image was largely constituted by its split nature pulling it apart, along the Nile axis, between the Mediterranean and East Africa. Apart from the designs of the Turks in the nineteenth century, the British asserted the divisions between northern Sudan and southern Sudan. A powerful discourse aided by administrative regulations made clear to the northern Sudanese that they belong to North Africa – to an Arab Islamic civilisation – and some of the elite cherished that categorisation. The glories of imperial Ethiopia and its constructed image as symbol of Africa's freedom celebrated by the black masses on the African continent and outside it even in the Caribbean Sea did not appeal to the

Sudanese, Ethiopia's immediate neighbour. On the contrary, aspirations to unity with the colonial partner, i.e. Egypt, labelled the Ethiopian highlanders the enemy and, therefore, excluded them from the "Unity of the Nile Valley".

The Ethiopians strategically viewed themselves as an island in an Arab/Muslim ocean, a claim that would not have acquired any meaningfulness had it not been for the Sudan's alliance with what would become the torchbearer of Arab nationalism, Egypt. The Sudan was considered a major player in the Arab nationalist concern to make the Red Sea an Arab lake (Tilahun 1979). The Sudan was accused of conspiring with Egypt in fuelling ethnic and religious conflicts in Ethiopia with the aim of delaying the construction of any dam and irrigation system in the Blue Nile Basin (Woube 1995:18). Viewing the Sudan's role in the region as coinciding with or complementing that of Egypt, Ethiopia boycotted what was considered a goodwill meeting called by Sudan in 1960 driven by 'its commitment to an integrated approach to Nile control and development' (Khalid 1984:12) and in which Sudan expressed a clear solidarity with the upstream riparians.

Thus, following the Sudan's independence and for about four decades of effective engagement in international trade, Sudan and Ethiopia, due to psychological barriers, were deprived of optimising their neighbourliness. The Sudan's longest border with Ethiopia is, in effect, a zone of tempests, as it hosts rebel movements against either of the countries. During the Cold War, this border witnessed one of the longest civil/liberation wars in history, that led by the Eritrean Liberation Movement (ELM), which was succeeded by the Eritrean Liberation Front (ELF) in 1961 against the Ethiopian state and invited regional and international confrontations.

The Sudan and Ethiopia engaged in effective sabotage through the most destabilising method: backing rebels on their lengthy border (see Young 2003:159-160). After the early 1980s, Marxist Ethiopia became the major supporter of the leftist rebel movement in southern Sudan. Since Sudan supported the ELF against the government of Ethiopia, Mengistu never hesitated to supply weapons to the SPLA (Duany and Duany 2000:176).

### **9.3.2 Sudan's change of attitude towards Ethiopia**

Relations between states in the region changed frequently from good neighbourliness to hostility and the reverse. The Sudan and Ethiopia inaugurated the 1990s with zealous friendship and built an apparently first-of-its-kind alliance between them<sup>9</sup> despite the fact that the leadership of the two countries adhered to incompatible ideologies. Thus, the new Ethiopian government had chased the SPLA out of Ethiopia, as the latter was allying with the ancient regime. This had caused a serious loss to the SPLA and contributed to seriously weakening it (Young 2003:161).

An apparent drive that would push the Sudan and Ethiopia to an agreement seemed inevitable. What brought Sudan and Ethiopia closer to each other remains important to understand. Researchers studying the Nile have over-dramatised the “Egyptian Condition”, therefore, missing what would replicate this condition in the Sudan. In other words, northern Sudan, at least, is witnessing a process of population concentration, resulting from environmental scarcity, making it largely dependent on the Nile water for irrigation (Chapter 8). Thus, it is not Egypt alone that reacts to what is going on upstream; Sudan too, stricken by severe environmental problems, is closely observing what is going on in the upstream. In the early 1990s, as pointed out earlier, Sudan asserted its need for a fair share of Nile water and signed an agreement with Ethiopia associated with the Blue Nile and the Atbara Rivers, nightmarish moves that heightened Egypt’s fears.

However, the honeymoon between the new regimes in the Sudan and Ethiopia did not last long, especially following the assassination attempt on Egypt’s president, Hosni Mubarak. The SPLA was allowed to come and operate from inside Ethiopia, supported to take control of Sudanese border towns and military force of Umma and Democratic Unionist parties were allowed to open offices in Addis Ababa (Young 2003:162-6). The Blue Nile Valley Organisation, which posed a threat to Egypt, came to a halt in the second half of the 1990s because of improvements in Egyptian-Sudanese relations (Said 2001). Yet tensions with Ethiopia in the 1990s were part of a wider tense atmosphere between the Sudan and its neighbours, with the Sudan accused of exporting Islamic fundamentalism (Seri Eddin 1998:299-302) and appearing as the source of all troubles in the region. Sadiq Almahdi, the former democratically elected prime minister of Sudan, described the Sudanese military regime of the time as a “bad-mannered cat”, which committed grave errors and provoked the animosity of neighbouring countries (Seri Eddin 1998:284).

Ethiopia accused Sudan of being behind the attempt to assassinate President Husni Mubarak of Egypt and that in 1996 the Sudanese army launched an assault inside the Ethiopian border. Ethiopia also accused Sudan of supporting opposition movements – the militant Islamic fronts such as the Oromo and the Islamic groups in Somalia – against Ethiopia and therefore building a siege about it from the west and the east (Seri Eddin 1998:296). The same old fears of being an island in an Islamic ocean were thus revived. In turn, Sudan accused Ethiopia of penetrating its territory, which Ethiopia denies (Seri Eddin 1998:313), and on at least one occasion Sudan accused Ethiopia of supporting the SPLA. However, these tensions hardly

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9. In the past, alliance between the Sudan and Ethiopia seemed not to be possible even when it was dearly needed in order to face European invasions. In 1888, Emperor Yohannes of Ethiopia suggested to Khalifa Abdullahi to unite efforts in the face of European invaders (Haj Hamad 1999:20); however, the Khalifa downplayed the initiative despite the looming threat. Emperor Menilek also ‘sent fervent letters protesting African solidarity, but stopping short of entangling commitment’ (Zewde 1991:82), which seemingly did not get the attention they deserve.

seemed relevant to Nile hydropolitics before 1997. Early that year Ethiopian newspapers uttered some popular protest about the alliance between Egypt and the Sudan regarding Nile water, even though these two downstream countries had experienced their tense conflicts in the meantime (Seri Eddin 1998:318).

Unlike the long tensions of the 1970s and 1980s, those of the 1990s were relatively shorter-lived, and the Sudan and Ethiopia grew more effective in strengthening their ties. In January 1997, the Ethiopian position had moved towards adopting solutions to the conflict with the Sudan (Seri Eddin 1998:315) and the latter seemed more than willing to reach a deal and cement relations. According to Young (2003:174), the support of the Ethiopian government to the SPLA in the mid-1990s had to a large extent compelled the Sudanese government to come to the IGAD negotiation table in 1997 and agree on the Declaration of Principles, which it rejected in 1994. The ideologically incompatible regimes increasingly moved closer to each other politically and economically. Apparently scrapping its fundamentalist cross-border ambitions, the NIF regime in the Sudan paved the way for closer economic ties with Ethiopia. Thus, apart from flood and silt control (which will be detailed later), cooperation in the fields of transportation, hydropower, and trade started to gain momentum.

Serious steps towards closer cooperation were made by the end of 1999, when 'Ethiopia and Sudan agreed to open to traffic the road linking Azezo, Metema [in Ethiopia], and Gedarif [in Sudan]. Some 118 of the 175 kilometre road linking the Ethiopian-Sudanese border to Gedarif had already been completed, as had 50 of the 187 kilometre road from Azezo to Metema' (ESPAC 2001:3). A remarkable step was the creation of the Ethio-Sudanese Ministerial Committee in March 2000 with Sudan pledging to translate into action all of the agenda points to which it had agreed (*Al-Shari Al-Siyasi* 24 April 2000). Meetings of the Joint Ministerial Committee were to be held every six months in each of the two countries for the purpose of developing relations in the domains of politics, security, trade, transportation, and communication (*Al-Sahafa* 27 April 2000, see also ESPAC 2001). In March 2000 the two countries stated that their ties were "now much stronger" than in the early 1990s (ESPAC 2001). An important step followed in the form of the Conference for the Development of the Sudanese-Ethiopian Shared Borders, held in Gedaref – a Sudanese town close to the Ethiopian border – 23-25 April 2000 in accordance with a decision of the Joint Ministerial Committee of the two countries (*Al-Sahafa* 27 April 2000). In May 2000, work began on the Doka-Gallabat road link between the two countries. June the same year witnessed a further treaty between Ethiopia and Sudan on agricultural cooperation, including wildlife protection, crop production, and development of natural resources, as well as joint efforts to control smuggling along the border (ESPAC 2001). Observers note that the most fruitful outcome for the two parties was the decision to complete the highways between the two countries; vis. the Gedaref-Doaka-Gallabat-Matamma-Gonder and Nasser-Jiko-Gambella highways, for their strategic, security, and trade importance (*Al-Sahafa* 27 April 2000). The first highway, i.e. Gedarif – Gonder was completed

in mid-2002, where it will serve connecting Ethiopia to the Red Sea and transporting oil and endorsing economic activities between the two countries (Young 2003:169). Besides extending these land roads, the Sudan and Ethiopia also engaged in cooperation over use of a port outlet on the Red Sea. In association with this, 'plans have now been made to link Sudan and Ethiopia by rail. The railway will link Port Sudan on Sudan's Red Sea coast with Ethiopia's southern-most town of Moyale' (ESPAC 2001). These rail lines and highways are to be complemented by the implementation of trade protocols. The Gedarif Conference is considered the proper ground for energising and enriching the experience of the two countries, especially the brotherly atmosphere that prevailed during the meetings (*Al-Sahafa* 27 April 2000). Steps towards cooperation between the Sudan and Ethiopia also feature in connection with hydropower. Hydropower development and trade, according to Hagos (2000:6), is viewed as one of the most feasible cooperation projects for the eastern Nile sub-basin countries. Meanwhile, the Sudan can exchange oil on preferential terms with Ethiopia. An announcement had been made since November 2000 regarding Sudan's preparedness to export oil to Ethiopia, including considering the building of an oil pipeline to link the two countries (ESPAC 2001).

As a sign of cooperation, the tense issue of the border conflict between Ethiopia and the Sudan, namely over the ownership of lands in Al-Fashaga Area, was overcome. This conflict which emerged since the 1960s, involving farmers backed by local authorities, had become worse in the aftermath of President Mubarak assassination attempt, where the violence between the security forces in the two countries claimed the lives of an estimated hundred soldiers (Young 2003:170). Very recently, the Sudanese envoy to Ethiopia, Osman Al-Sayed, disclosed that the two countries had finalised a map (on paper) of their common border and that they were awaiting assistance from the international community to demarcate the border on the ground. He indicated that 'the EPRDF [Ethiopian Peoples' Revolutionary Democratic Front] government was *the first Ethiopian government to be willing to talk with Sudan on the border issue*' noting that 'the two countries had also established excellent bilateral relations in other fields' (*Sudan Tribune* 15 November 2004, italics added).

The border conflict, in fact, indicates the added importance being given by Ethiopia to the western part of the TIBZ, the stability of which necessitates developing an understanding with the Sudan over previously unresolved issues. In the Setit-Humera region, lying in the Teccaze-Anghereb catchment, 300,000 irrigable hectares were identified by the U.S. Bureau of Reclamation in 1964 (Waterbury 2002:122). Ethiopia would gain from the development of border areas. The large size of the population on the borders of the Sudan and Ethiopia, on which we extensively detailed elsewhere (El Zain forthcoming (a)) encourages economies of scale and trade between the two countries, which would likely enhance the capacity of the "food granary" region, shared between them, and, hence, help overcome food insecurity. Recently, Sudanese investors welcomed

the Ethiopian move to open up its markets for foreign investors, especially praising the Sudanese investors (Young 2003:172).

*Strategic importance of Ethiopia to Sudan*

Why are Sudan and Ethiopia increasingly coming together? Two main factors have contributed to Sudan's effective engagement with Ethiopia. One, immediate, is the concern of the military regime in the Sudan to achieve a final victory over the rebel army operating along the Sudan-Ethiopia border. The other is the concern about water, implying medium-term and strategic cooperation. The immediate concern was partly realised as the SPLA was forced to evacuate key positions inside Ethiopia after the fall of the Mengistu government (Goldsmith 2002:216). Later, through better relations with Ethiopia, Sudan sought to exert stronger influence on Eritrea – the host of the northern Sudan opposition groups. In the late 1990s this took the form of an alliance against Eritrea, involving Yemen. As for the Sudan's independent foreign policy, Ethiopia is a strategic neighbour. It is the country with a long border curving into the belly of the Sudan and posing some serious security issues. Close to strategic facilities (dams and power stations associated with them), the country's granary (the Gedarif region), and the heavily populated areas, Ethiopia can pose a serious threat if it launched direct military assaults inside the Sudan. Combined with Ethiopia's pronounced need for Nile water, these made Sudan's lukewarm attitude towards Ethiopia only temporal.

While its immediate concerns are of significant importance, Sudan's medium-term and strategic concerns about the water flowing from the Ethiopian highlands are of paramount importance, especially in response to environmental scarcity. The highlands are, in fact, the source of watercourses on the banks of which the Sudan's major irrigated schemes and hydroelectric facilities are located. Of the water Sudan uses for irrigation from the Nile, more than 80 per cent comes from Ethiopia. Of Sudan's 3.9 million *feddans* irrigated from Nile waters in 1979, 68 per cent was irrigated from the Blue Nile, 14 per cent from the White Nile, 8 per cent from the Main Nile downstream of Khartoum and 10 per cent from the Atbara (Walsh and Musa 1991:53, see AllRefer 1991). Watercourses coming from Ethiopia not only traverse Sudan's most fertile and infrastructure-endowed lands, but also are cost effective. 'Because the Blue Nile lies at a higher elevation than the White Nile, it is in the Sudan's interest to pursue water storage and conservation projects on the Blue Nile. Using gravity flow for irrigation reduces the high costs of pumping water uphill from the lower-lying White Nile' (Waterbury 2002:129, see also Tvedt 1992b:82, Markakis 1998:181). In addition, Sudan's main hydroelectric generating facility, i.e. the 280-MW Roseires Dam, is located on the Blue Nile (*Sudan Tribune* 17 July 2004), as well as other facilities at Sennar on the Blue Nile and Khashm Al-Girba on the Atbara River. The most profitable parts of Sudanese agriculture and electric facilities depend on utilisation of the Blue Nile water (Tvedt 1992b:80). Thus, in addition to the contradiction it has with Egypt in connection to

the latter blocking it from realising its irrigation potential, Sudan has a special interest in moving closer to Ethiopia for practical matters. On the other hand, Egypt, which might engage Ethiopia in conflict, in fact, has its interests elsewhere. Unlike the Sudan, Waterbury (2002:129) argues, 'Egypt has a long standing interest in developing such projects in Victoria, Albert, and Bahr al-Jabal sections of the White Nile, mainly because the riparians in these systems (Uganda and, de facto, southern Sudan) are relatively weak.'

In our point of view, watercourses coming from Ethiopia engage the Sudan in serious interaction with this eastern neighbour to achieve a medium- and long-term strategic relationship. Sudan's 'expansion of irrigat[ed] agriculture is best pursued in cooperation with Ethiopia. In the long run, an Ethiopian-Sudanese cooperation could be very attractive for both countries. But so far, Egypt has been doing its utmost to prevent this' (Stroh 2003:106-7). The medium-term concerns include cooperation for managing silt and flood problems and the strategic concern present in the looming water scarcity that Sudan might face should Ethiopia unilaterally develop the Blue Nile and the Atbara River.

#### *Medium-term concerns for Sudan in relation to Ethiopia*

In relation to the Nile Basin, three things must be overt to the Sudanese authorities with regard to relations with Ethiopia. These are, firstly, technical matters concerning floods and the management of silt coming from the Ethiopian highlands; secondly, population issues, particularly refugees, and related to this; thirdly, the concern with food security in the region. Floods, silt accumulation, and refugees have a direct and immediate impact on the Sudan's national security. A short note on their magnitude is due here.

In August 1988, according to Hancock (1989:5), 'Sudan (previously drought-stricken) was hit by severe flooding of the River Nile and, overnight, more than a million people were rendered homeless in Khartoum, the capital city. As the waters continued to rise, epidemics of diseases like cholera and typhoid posed an ever-increasing threat.' The 1998 floods, which resulted from heavy rains in Ethiopia and southern Sudan (Chapter 4), 'affected about one million people, of whom well over 100,000 were displaced. It resulted in a dramatic increase in the incidence of malaria, diarrhoea and other water-related diseases, primarily because of flooded latrines, polluted wells, destroyed water systems and the presence of stagnant water' (OCHA 1999b). Its impact on the agricultural sector was equally enormous. 'Production in the irrigated agricultural sector was seriously reduced, up to 20% of the country's date palm trees were destroyed and there were large losses of livestock from disease and drowning (OCHA 1999b).

In the Northern State, the floods of 1998 wasted 141,581 *feddans* of cultivated areas; there was complete flooding of 3 million palm trees and partial flooding of

902,800 fruitful palm trees and the destruction of 4,586 houses, 261 shops, 42 schools, 5 clinics, 6 clubs, and 25 mosques (Salih 1999:12). Floods are causing havoc, convincing dwellers of the islands along the River Nile that they have to leave their islands and other low areas (Salih 1999:14). 'The preliminary cost of the recovery programme was estimated to be US\$ 230 million' (OCHA 1999b).

Sudan's concern with controlling floods stems from the recent enormous damage and its frequent occurrence. The danger of floods caused by the rise in the Nile waters may be even more serious in the future given that recently flash floods have become phenomenal, often occurring simultaneously and leading to enormous damage. The recent floods are not only different from historical ones in terms of frequency (almost annually since 1998), but also in their geographical scale, which now covers the whole RZ as well as large parts of the NRZ (Chapter 4).

Looking to upstream water constructions for protection from the damage caused by the Nile floods is, thus, not only logical and necessary but also urgent for the Sudan. With this realism in mind, governments in the Sudan have always sought ways of controlling the mighty Blue Nile. It is therefore, opportune for the Sudan that Ethiopia engage in such control efforts, and it is, therefore, good for the Sudan not to block or encourage blocking of Ethiopia's development of its Nile tributaries. Instead of the prevailing lose-lose scenarios, Sudan and Ethiopia can achieve a win-win situation. Sudan could benefit from construction of dams in the upstream in order to regulate the strong fluctuations of the water flow to which currently it is exposed more or less unprotected; as such, Sudan could have reduced the floods of August 1988 (Stroh 2003:98-100).

Silt accumulation problems in the Sudan, on the other hand, reflect the enormity of soil erosion in Ethiopia. Ethiopia presents, according to Whitaker (1988:142), 'an extreme example of erosion's progress. In that country's central highlands, which support about 80 percent of the nation's people and 70 percent of its cattle, more than a billion tons of topsoil erode each year, contributing to an astounding national erosion rate that is 137 times the world average.' Soil erosion, in Ethiopia, is estimated to amount to a loss of 80,000 hectares per year, a considerable size of land enough to feed 66,000 families (Kumar 1987:52). Severity of soil erosion in Ethiopia's Nile Basin is part and parcel of this larger scene in the country. Erosion in the Nile Basin may be even higher than elsewhere in Ethiopia, namely because the tributaries of the Nile system in Ethiopia traverse most of the highly eroded parts of the Ethiopian highlands. Reviewing different estimates of soil erosion in this region, Simon Mason (2003) notes that 'the sediment load stemming from the Ethiopian highlands varies between approximately 500 million tons/year... and 587 million tons/year'.

Worth noting here is that the largest part of the eroded soils in the Nile Basin are carried by the Blue Nile and the Atbara. An estimated 90 per cent of the Nile sediments stem from these two rivers, from a catchment area of 332,000 km<sup>2</sup> (Mason 2004:79). Certainly large amounts of this soil enter the Sudan, where they create enormous challenges. All of Sudan's large dams, except Jebel Aulia –

originally built to regulate water for Egypt – are on Nile tributaries coming from Ethiopia, namely the Blue Nile and the Atbara. All these dams suffer problems of sedimentation to different degrees. Khashm al-Girba Dam lost half of its storage capacity between 1964 and 1990 (Abdel Ati 1992:32, Waterbury 2002:136). Roseires Dam, the largest in the country, lost a fifth of its 2.4 billion m<sup>3</sup> storage capacity between 1966 and 1990 (Waterbury 2002:136, see also Moghraby 2002:32). Besides the implications of reduced power generation, which often invokes urban strife, the accumulating sediment has damaging impact on the agricultural regime in areas downstream of these dams. ‘Because of the sediment build-up, as little as possible of the silt-laden waters coming into the reservoirs in July and August are stored, thereby limiting summer cultivation and putting at risk cultivation during the peak months of October and November in years of low flood’ (Waterbury 2002:136). Moreover, siltation causes a decreased volume of discharge, reducing water-current velocities, in turn making rivers in the Sudan vulnerable to weed invasion and water-related diseases (Moghraby 2003:32). Thus, the construction of reservoirs in Ethiopia, according to Whittington and McClelland (1992:150), would provide the Sudan with a much needed water security, given that agreements to ensure timely discharge of water are worked out.

Thus, it is only natural for Sudan to pay greater attention to what is going on in Ethiopia. In fact, the 1991 agreement with Ethiopia shows that Sudan’s major interests are on the Blue Nile (Dellapella 1997). The Blue Nile is causing problems in both countries. The country depicted as the water tower of Africa is in fact experiencing negative effects of water abundance, which actually contributes to its misery by generating high levels of erosion and sweeping away its fertile soil. Thus, cooperation between the Sudan and Ethiopia could help lessen the problems in each. ‘Soil and water conservation measures initiated by [Ethiopia’s] Ministry of Agriculture with support from the international community have improved water retention and reduced soil loss’ (Nkrumah 2002, square brackets original).

Associated with the above environmental condition, causing floods and soil erosion, is the issue of population movements across the Ethio-Sudanese border. Besides being traversed by guerrilla fighters, with their landscape-reshaping interventions, ‘large numbers of war and famine refugees from Eritrea, the Sudan, and western Ethiopia...have sloshed about the region for the past thirty years or more’ (Waterbury 2002:122). This sloshing about the region has resulted in the slow population concentration in the border region; a fact which we presume contributes to enhancing relations between the two countries. The truth of population concentration along the borders is contested by what has now become an established belief that migrations in Ethiopia followed an unchangeable centennial north-to-south pattern, which means the Nile Basin is a sending region, therefore, its relative population size is accordingly decreasing. However, according to our own calculations (including estimations), this centennial relative population decrease in the larger Nile Basin of Ethiopia had ended by the late 1970s-early 1980s, when the basin’s population slightly increased from 37.49 per cent in

1972<sup>10</sup> to 37.58 per cent of the total population of Ethiopia in 1984<sup>11</sup> (Table 11.2). Yet, its more apparent leap took place in the decade to follow, when, in 1994, it counted, according to Mekonnen (2000:3), 44 per cent of the total population of Ethiopia. A study entitled *Descending to the river: Environmental scarcity, population concentration and Ethiopia's contest for the Nile waters (1970-2002)* provides detailed evidence of east-to-west migrations and population increases within the Ethiopian Nile basin both in total numbers as well as in urban areas (El Zain forthcoming (a)). In this respect, one would argue that the border zone attracting large numbers of population because it is becoming, relatively, more secure as earlier colonisation of the area by agribusiness has gradually decreased its wilderness and slowly repelled or decreased the *shifita*<sup>12</sup> gangs, which long infested the region. The midstream of the Blue Nile, which probably appeared as wild region for long periods is, probably, now witnessing the most rapid population increase in the whole Nile Basin, including the corridor from Asosa town (Ethiopia) in the south and until the border with Sudan to the north (El Zain forthcoming (a)). The five regions adjacent to it (Gojjam, Gondar, Wellega, Central Region, and Khartoum) have the highest rates of population increase in both Ethiopia and the Sudan. The first three, i.e. the Ethiopian Nile Basin regions, started to witness steady population increase since early 1970s (for details see El Zain forthcoming (a)).

The number of refugees moving into the Sudan from the Ethiopian border area in the late 1970s was enormous. Of the 570,000 refugees hosted by the Sudan in the early 1980s, 420,000 were from Ethiopia, involving Eritreans, Tigrayans, Oromos, Anuak, Nuer, and various smaller tribes, escaping the continued repressive measures by Ethiopian governments, violent conflicts, as well as deserters from the army (Karadawi 1983:538). Intensified conflict in the 1980s until the early 1990s added enormously to this flow. Eastern Sudan has thus hosted over 1 million refugees for a period reaching three decades (see Haj Hamad 1999). As some of these refugees were escapees from resettlement areas in Ethiopia (Steingraber 1987), the Sudan has also become sensitive to this population relocation. For the Sudan, population movements, whether by groups escaping civil war in Ethiopia or fleeing resettlement camps in the western part of that country, raise security concerns. Most importantly, such concerns are felt frequently, almost permanently, due to instability of Ethiopia. It should be emphasised here that the issue of resettlement of the Ethiopian refugees had been primarily a security issue for Sudanese authorities.

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10. Calculated from Ethiopia's Statistical Abstracts for the year 1972 (CSA 1972).

11. Calculated from population figures for different *awrajas* provided in Ethiopia's Statistical Abstracts (CSA 1984).

12. A word used in Ethiopia, but also in eastern Sudan, to refer to bandits who are specialised in robbing livestock and, in some occasions, harvest. The border between the Sudan and Ethiopia was their safe haven, being remote from regional capitals in both countries.

The Resettlement Committee made in charge, following the mid-1980s, was completely controlled by the security apparatuses (Dafalla 2003:125). The issue affects Sudan's foreign relations, especially in association to the airlifting of the Falasha Jews to Israel, which proved to be embarrassing for Sudan in relation to Arab and Islamic states (Dafalla 2003:125). It is also worthy to recall here that population movements, resulting from similar environmental changes, triggered a war in which Ethiopia is involved. The Ogaden war between Ethiopia and Somalia, according to Norman Myers (2004) 'had been caused in major measure by deforestation and soil erosion, plus runaway population growth and poverty, in the Ethiopian highlands, which triggered widespread famine followed by a mass migration from the highlands toward the lowlands and hence toward the Ogaden – which Somalia viewed as prelude to an invasion.'

In our view, the relocation of population to the lowlands in Ethiopia's Nile Basin invites another interpretation – it is not only a reasonable response of the Ethiopian government to environmental problems on the ground, but also represents responses to external pressures on the western frontier with the Sudan. It is noteworthy that in 1975 Egypt and Sudan constructed their largest joint agricultural scheme, the so-called Father of All Agricultural Projects on the southern Blue Nile, on the border along the western part of the Ethiopian highlands to the south-east of the town of Roseries (Al Bander 2000:291). The involvement of Egypt in this agricultural project perhaps alerted the Ethiopians to take measures. Thus, the then Ethiopian government, through fortressing the region with more population groups, responded to the Egyptian threat (war rhetoric), which might have been carried out through the Sudan.

Sudan's high security concern regarding its border with Ethiopia can be simply grasped in that along this border and the neighbouring hinterlands lies Sudan's "food granary" (its expansive rainfed mechanised farming schemes) with its influential agricultural lobby ready to push for strict security measures necessary for sustaining the lucrative business. Security issues between the Sudan and Ethiopia naturally make each highly concerned about dynamics in the other. Thus, while Ethiopia, in connection with population movements, remained less known to Egypt, it was, probably, more known to Sudan. Thus, the Sudan is well informed about pressures from Ethiopia, which might spill into its border. In the same way that the Sudan represents a pressure on Ethiopia so too does Ethiopia represent a pressure on the Sudan.

The above three problems have their repercussions in the future. It is only natural that the Sudan pays greater attention to its most security-sensitive frontier with Ethiopia, which Egypt is unlikely to appreciate. The Sudan's accumulated experience with regard to relating to Ethiopia makes cooperation between them imperative.

*Strategic concerns and the potential increase in demand for Nile water in Ethiopia*

The immediate and medium-term concerns with the Nile are only signals for more strategic concerns of which two can be identified. First, the Sudan's move in the last decade is necessitated by its own internal objective and subjective conditions (both outcomes of the new population-political contours). Sudan is going for more Nile water (Chapter 8), while the major source of Nile water (i.e. Ethiopia) is doing the same and the major consumer of this water (i.e. Egypt) is yet to aspire for more. Squeezed between these two hydropolitical necessities, Sudan's immediate reaction and strategic choice could be portrayed. Population concentration as a source of internal conflict is the main cause for change in the Sudan's attitude. Since the mid-1980s, feeding the burgeoning cities came to present a critical ordeal for the Sudan (Chapter 8). Hosting the highest number of IDPs in the world, the Sudan faced serious food insecurity. This significant change, which we attribute to change in the population-political map, gave added weight to the Blue Nile and the Atbara and, therefore, to Sudan's relations with Ethiopia in the 1990s. The importance of these rivers to Sudan is currently becoming even greater given that the Sudan aspires to tap its own large potential and, therefore, needs water to continue agricultural development, for which water demand is estimated to reach 31 billion m<sup>3</sup> (Chapter 8).

Secondly, Sudan's strategic concerns are driven by ripening objective conditions (of environmental scarcity and the consequent population concentration) in Ethiopia and pressures from Egypt. Worsening objective conditions in Ethiopia are felt in the Sudan through their devastating impact – increased floods, sedimentation, and refugees in their connection with land reforms (between 1974 and 1993), environmental degradation, population concentration, and food security. Thus, in the 1990s, Sudan's relation with Ethiopia changed because of the similar change in population map of the latter (for details see El Zain forthcoming (a)). Unlike Egypt, the Sudan, sensitised by its own condition, perceived the potential of populations moving into the mid-streams of the Ethiopian Nile Basin with both immediate and strategic impacts. While Ethiopia was afflicted by the same perceived pressures as the Sudan, the latter seems to have lost the guarantees sustaining the old sympathy and sacrifice of public interest to sisterly relations with Egypt. Strategically, Ethiopia mirrors what it is going on in the Sudan's own soils, i.e. population pressures (inside the RZ), which yield more demand for the Nile water. The change of perception about scarcity in the Sudan in the 1980s and Ethiopia's concern about the Nile in the same decade thus are outcomes of environmental changes *par excellence*.

We must note that the added importance of the Blue Nile for the Sudan made it an acutely contested arena. The British legacy of concentrating development along the riverbanks made the Sudanese leadership in the post-independence era see the Nile as the generator of state revenues and solution to all potential problems. The tapping of at-hand resources along the banks of this river has actually

made these banks, in the imagery of decision-makers, *the only resource* in the Sudan that is worthy of consideration (Chapter 3). Thus, the Sudan has given more consideration to the Blue Nile and the Atbara because it needs them the most and, at the same time, Ethiopia too needs them the most. In both countries, population is increasingly concentrating along the banks of the Blue Nile and the Atbara and their tributary streams more than in any other parts of the countries.

The impacts of drought have changed the perception of scarcity in the Sudan, with the country starting to fear scarcity in real terms, not just for achieving economic development, but for meeting actual urgent food needs. Food shortages have inflicted serious consequences – besides taking the lives of a quarter of a million persons in Sudan. They contributed to the collapse of the May regime in 1985 – the same year of the famine which claimed a million lives in Ethiopia. In connection to this and given the erratic nature of rainfall, it is only natural that the Sudan would bet more on its river waters and take the necessary measures to guarantee its future irrigation plans.

In the far future, the Sudan should also care about the amounts of water coming from the Ethiopian highlands. This neighbour might undergo serious water scarcity accompanied by a degradation of soil. Despite the perceived abundance of water, the largest part of Ethiopia suffers from scarcity.<sup>13</sup> In fact, the discharge of Ethiopia's tributaries of the Nile represents 74.8 per cent of the discharge of all rivers in this country (calculated from Woube 1995:26). Also, Ethiopia probably needs to regulate the flow of water in such a way that water does not take huge amounts of soil.<sup>14</sup> Development efforts towards the Nile are conceived to help 'reduce the dry season river base flows and spring flows' (Mekonnen 2000:9). Should regulated irrigation – sustainable as is anticipated – contribute to reducing soil erosion, Ethiopia would have one more incentive to go for irrigated agriculture. Irrigated agriculture in the virgin land inside the Nile Basin would relieve the rapidly degrading soils in the Ethiopian highlands, once considered the granary of Ethiopia. By reducing soil erosion, such plans would relieve Sudan of the chronic problems of silt accumulation.

In light of the above, Ethiopia has determined its position on Nile waters partly because of its population growth, which has already divided its national pie into much smaller slices. Moreover, Ethiopia underwent the consequences of droughts that decreased the size of its pie resulting in a rising insecurity on the food front. However, most important is the population concentration within the Nile Basin. The significance of the Ethiopian position stems from the fact that it is the source of the bulk of the Nile waters, but at the same time, it is facing serious environmental problems, which have radically changed its previous attitude towards the Nile. Ethiopia has 3.7 million hectares of potentially irrigable land.

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13. Except for two (Omo-Ghibe and Genale Dawa), all river systems in eastern and southern Ethiopia are water scarce (Hagos 2000, also see Rahmato 1999).

Should half of this land be irrigated it would reduce the Nile flow to downstream by some 9 billion m<sup>3</sup> per year – equivalent to 16 per cent of Egypt's current annual supply (Postel and Peterson 1996:39-40).

At the peak of food insecurity in Ethiopia its victims were vastly more numerous than in the Sudan. The limited authoritarian development and the techniques of control in Ethiopia contributed to the immense impact of food shortage. The nature of authoritarian development in Ethiopia, however, makes the connection between food security and the Nile water a difficult task. In fact, until the late 1960s Ethiopia overlooked the urgent need to use Nile water. Thereafter, Ethiopia seems to have become of the "same feather" with Sudan, and the two countries started to "flock together". Or, in other words, the two countries that for centuries perceived the value of the Nile differently, until late 1960s-early 1970s, have now started to share a compatible concern. For during this period they faced similar challenges. Especially, in the case of Ethiopia the challenges it faced had direct impact on the Sudan and even on Egypt. According to Woube (1995:14), the vegetation changes in the Ethiopian highlands had a profound impact on the physical and human environments both within Ethiopia and in the lower Nile riparians. Certainly the severity of the environmental stress in Africa resulted in creation of states' groupings to collaborate in addressing this stress. Asserting new challenges, it finally 'led to the establishment of the Permanent Inter-State Committee on Drought Control in the Sahel (CILSS) in Western Africa and the Inter-Governmental Authority for Drought and Development (IGADD) as the East African counterpart' (Okidi 1997:163). IGADD reflects more clearly the common challenge that Sudan and Ethiopia face together with other neighbouring nations.

IGADD, which involves four Nile riparians, was created in 1986 by the six African states of Djibouti, Ethiopia, Kenya, Somalia, Sudan, and Uganda. The aim was to support regional efforts to combat the effects of drought and desertification. In 1993, Eritrea became the seventh member in this organisation (USGS 2004), adding a fifth Nile riparian. However, 'Ten years after its creation, IGADD was faced with new emerging geo-political and economic challenges that called for innovative approaches, new strategies and directions. The IGADD Member States decided to restructure, revitalize, and expand the mandate of the organization' (USGS 2004). Thus, the IGADD, at the Djibouti summit of 1996, underwent a revitalisation which institutionalised three areas of concern, namely "conflict prevention", "conflict management and resolution", and "humanitarian affairs" (Van Baarsen 2000:41). Hereby IGADD was renamed IGAD, the Inter-governmental Authority on Development. It is interesting to note how within a short period the leadership in the region realised the importance of a holistic view. 'The name was changed to the Intergovernmental Authority on Develop-

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14. Presumably, the distribution of one river's water into regulated channels might confine the water inside the banks of this river and decrease the rush of water. The soil that will be affected, thus, might be less than if the river is left to run unruly.

ment (IGAD) to better reflect these broadened goals. IGAD's priorities, goals, and vision are now towards regional integration for Food Security and Environmental Protection, Natural Resource Management, Economic Cooperation and promotion of Peace and Security' (USGS 2004). Sudan shares these concerns with Ethiopia, not with Egypt, where in the latter they do not represent priorities.

The states that have engaged in such initiatives have already been faced with the severity of drought; as a corollary, drought became an agenda item affecting their internal and external policies and inducing an increasing security and environmental awareness. Thus, it seems natural for the Sudan and Ethiopia to open up towards each other and share some common concerns. The fact that Ethiopia has also suffered the impact of severe drought, has led to speculation in the Sudan about its neighbour's dire need for Nile water. Scarcity for the Sudan stems from Ethiopia's perceived need for the Nile water – its inevitable resort to regular irrigation in its part of the Nile Basin for which feasibility studies were completed some decades earlier and which were lately reconsidered (for details see Rahmato 1999). Most importantly, however, the primary concern of Ethiopia with irrigation involves, besides pushing for economic development, the need to achieve food security (Stroh 2003:107). This latter problem, along with its pressures and dangers, can reckon on serious appreciation from the Sudan. Sudan has understood the need not to let Ethiopia “go it alone” in transforming the “old hydropolitical regime” of the Nile and at the same time the need not to leave Egypt thirsty. Thus, the Sudan's rapprochement with Ethiopia does not stem purely from revenge on Egypt; rather it is immediate public interest, which its northern neighbour, nonetheless, is unlikely to appreciate.

The difference between the Sudan and Egypt, in this regard, is in the time when they realised and started to take seriously the changes taking place in Ethiopia and their view of whether the blocking of Ethiopia's development of its Nile tributaries would affect the immediate national security issues. In this respect, the Sudan is likely to suffer national security problems, while Egypt, protected by the expansive desert and, before it the national territories of the Sudan and Eritrea, is not. Permanently raising a stick in the face of Ethiopia, Egypt overlooks the dangers its policies imply for the Sudan. The latter, maintaining a stance it has called for since the 1960s – an all-basin framework – was therefore earlier to respond to problems in its most strategic neighbour. Egypt, on the other hand, trapped by a colonial geopolitical imagination regarding the Sudan, acute distrust of Ethiopia, added to its own acute vulnerability, was rather slow to perceive these changes. Although Egypt started to adopt new attitude towards the upstream, in fact, it transformed this to actions only after the Sudan's move towards Ethiopia triggered the situation and threatened additional risks.

With regard to the blocking of Ethiopia's development of its Nile tributaries, Sudan can no longer share the Egyptian position. Given what we have detailed above such blocking would have serious impacts on Sudan's national security. The Sudanese strategist, Mohamed Abulgasim Haj Hamad (1999) sees that Su-

dan has no solution to border problems with Ethiopia, which in his view do not attribute to political causes but also to issues of refugees and desertification, which necessitate closer ties with Ethiopia. Noting that he previously proposed the confederalism of the Horn of Africa, Haj Hamad (1999:11) calls for Sudan's strategic integrative orientation towards Ethiopia with that confederalism being its framework. He sees that what is strategically needed is Sudan's support of Ethiopia to achieve its development projects to ensure the existence of a strong and stable neighbour on the same ground as with the Egypt and Eritrea. Haj Hamad sees that all forms of instability in Ethiopia, resulting from economic or political instability, have negative impact on the Sudan.

The Sudan's preparedness to empathise with the situation in Ethiopia can be viewed from within two structural conditions: land reform and environmental scarcity, which dramatically transformed the Ethiopian landscape. The two conditions had direct impact on the Sudan, their most important consequence being that they unleashed large movements of population into the RZ in Ethiopia too. The latter is the upstream extension of Sudan's RZ, which is also witnessing an increasing population concentration. Yet to justify the Sudan's change of attitude, the most important thing to ascertain is whether Ethiopia's demands for Nile water are mere discursive exercises or whether there are new pressing imperatives to which the Ethiopian state must respond.

All the above shows that water scarcity in the Nile Basin has become real, and this state of affairs implies a new vision to overcome the multiplying bottlenecks. In Chapter 10, we shall see whether this condition of real scarcity has made the Nile riparian states more realistic and whether it stands as a cause behind the rising tide of cooperation in the form of the Nile Basin Initiative (Chapter 10).

## 9.4 Conclusion

In essence this chapter showed how the "domestic" might reshape inter-state relations. This chapter reiterated how ideological ties pointing to Sudan's water "surplus" made it seem unnecessary for downstream countries to develop effective water management systems. The "open frontier" established a belief that the state could maintain the situation of plenty by capturing more resources from the wilderness of the NRZ and the upstream RZ. This amounted to self-deceit of both the Sudanese ruling elite and the Egyptians that they could continue inexorably to tap more "alternative water resources" from the NRZ and upstream RZ. Within this self-deceit, owners of resources in the rainfed zone did not count as an obstacle, and this zone was conceived as an "open frontier" for continued acquisition of resources. Challenging this belief through what we considered to be the blocking of the frontier for expansion had serious repercussions for the historical alliance, at the core of which is the issue of avoiding scarcity of Nile water.

This is also important in association with what is largely taken for granted in most of the literature about the Nile especially that written by nationals of

co-riparians, that Sudan always sides with Egypt. In this discourse about Nile hydropolitics this perception contributes a great deal to shaping Sudan's relations with other co-riparians. However, this has now become questionable due to the necessities of nation-building and the imperatives of national security but most importantly due to the abrupt changes resulting from environmental scarcity on the other.

In the Sudan, socio-political and environmental dynamics seem to have reduced the likelihood of unity with Egypt. The old population distribution map, which gave legitimacy to the "imagined community", is changing dramatically, bringing into the valley groups which belong to other imagined communities, which have less or no sympathy with Egypt. While this change in the population distribution map has gradually taken shape since the 1910s, environmental scarcity has triggered, and therefore brought to the surface, a clear change of attitude in Sudan towards its two major neighbouring riparians. The "special" relationship between the Sudan and Egypt is getting less special, not only from the side of the Sudan but also from the side of Egypt. The lukewarm relationship of Sudan with Ethiopia is changing, however, with the two neighbours envisioning some avenues for cooperation.

As detailed, in recent years, the Sudan proactively deliberated with Ethiopia on its potential increase in demand for Nile water. This Sudanese attitude strengthened Ethiopia's position in bargaining over Nile water. The gain of Ethiopia in relation to change of Sudan's attitude clearly does not stem from a special sympathy of the latter driven by ethnic or religious ties, but rather, from the Sudan's public interest, which in the past was ideologically blocked as part of a strategy of siege against Ethiopia. Sudan, being overwhelmed by increased sedimentation, has sought in the short-term dialogue with Ethiopia that might help reduce its vulnerability to the latter's sizable soil erosion. Sudan, in the longer run, may have sought avenues to reduce the flow of refugees into its territory, reflecting its own sensitivity to movements of population into the RZ. In its interaction with Ethiopia, the Sudan has apparently realised that the real threats to its security are not military; rather they are primarily environmental, social and economic. As pointed out, the Sudan saw Ethiopia's increased concern with the Nile as leading sooner or later to the development of its headwaters. It therefore preferred cooperation rather than siding with its former strategic ally. For the first time, the Sudan and Ethiopia seem to have overcome their history of silenced hostility and started a form of cooperation between them in association with Nile water.

The change of Sudan's attitude towards Ethiopia seems to have triggered some dramatic changes in the region of the Nile Basin. In the next chapter, we shall see how this role played by Sudan brought positive deliberations among the Nile riparians.

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## 10 The Political Potential of Environmental Scarcity: Birth of a New Regime in the Nile Basin

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### 10.1 Introduction

This chapter examines whether the recent developments in the area of cooperation in the Nile Basin, marking the beginning of the regime of voluntary involvement, are outcomes to change in Sudan's attitude towards its two most strategic neighbours, Ethiopia and Egypt, resulting from the social effects of environmental scarcity. Unlike much of the literature, which is premised on the notion that most current changes in the Nile Basin are attributable to inter-state interactions, influenced by external factors, this chapter argues that driving forces at the domestic level represent the necessary condition that pushed for a new framework for cooperation among Nile riparians. The Sudan, responding to the challenges posed by the social effects of environmental scarcity primarily by peacefully pursuing its water needs, has apparently greatly contributed to the new arrangement in the Nile Basin. In three sections the chapter investigates cooperation among Nile riparians, in connection with what had obstructed it in the past and whether the time now is opportune for realising it and establishing ever-increasing integration among Nile riparians, especially with a more reconciliatory role played by the Sudan.

Thus, section 10.2 gives a short review of previous cooperative attempts among Nile riparians, while reflecting on the need for Nile water of each riparian. Section 10.3 provides a short description of the recent Nile Basin Initiative (NBI) as a cooperative framework and investigates the factors that contributed to establishing it; primarily, whether it is a response to current challenges. Besides the internal dynamics in the Nile Basin, this section reflects on the external factors which gave greater weight to the upstream riparians in regional politics. Section 10.4 examines whether the NBI provides for a framework allowing a "de-centring" the Nile Basin and whether this de-centring would give greater opportunity to the Sudan to pursue its water augmentation strategies effectively and peacefully.

## 10.2 Early attempts at cooperation in the Nile Basin

The goal of reaching “an integrated river basin development” framework, which has been at the top of the agenda for states sharing international rivers, is also reflected in a celebrated manner in the literature about the Nile. Espoused here is the belief ‘that the waters of the Nile require a basin-wide integrated approach which incorporates the rights, obligations and policies of all the relevant states’ (Khalid 1984:15). However, the literature on the Nile also reflects the nature of riparians’ conflicting interests, which have greatly hindered a comprehensive cooperative framework. A premise followed here is that cooperation did not fully materialise because the espoused integrated river basin approach has largely been reduced to economic development, namely seeing the river as an “economic unit” (Mageed 1981) rather than encompassing a broader philosophy of hydro-solidarity. Thus, irrigation and hydropower generation, according to Mohamed (1984:2), ‘came to be classified as the foremost uses of the river for securing livelihood everywhere in a predominant agricultural economy’. Certainly not all Nile riparians in all periods were or are interested in these two foremost uses of the river and even those interested differed in their perception of the value of each use. Moreover, though these two forms of water use may have formed a “complementary” economic development in the Nile Basin, this development remained far from being achieved. Hence, the involvement of Nile riparians in an all-basin cooperative development framework did not materialise for decades following their independence from colonial powers, despite the fact that the lack of such an approach contributed immensely to environmental degradation.

The three previous regimes of maintenance and compliance in the Nile Basin, i.e. the “regime without a hegemon”, the “quasi-hegemonic”, and “Cold War” regime, which reigned in the period between 1850 and the late 1980s (Chapter 1) were characteristically confrontational (for details see Waterbury 2002). Particularly, in the period following independence the contentions became more serious, essentially in connection with treaties signed in a completely different environmental and political atmosphere, yet which prohibited upstream riparians from doing anything with the Nile that Egypt did not agree with. ‘The various treaties have served not only to entrench the competitive attitudes’, as Brunnée and Toope (2002:146) would argue, ‘but, more fundamentally, have enforced, even encouraged, separate and competitive identities among the Nile Basin states’. Riparians’ contest for the Nile resources in the Cold War context was characterised by nationalistic assertiveness (Hultin 1995:38) driven by unilateral thoughts and actions (Arsano 1997:35). In the words of Waterbury (2002:34), ‘to the extent that the riparians have elaborated explicit policies regarding the basin’s water, we can read them as the product of unitary states pursuing what they consider their national interests’. Additionally, states’ actions were dominated by a ‘state-centric approach’ (Swain 2002:301, see also Waterbury 2002:34, Tafesse 2001:71), to the neglect of the interests of different localities and ethnic entities.

At one level, the contest among the riparians appeared more for *future* shares of the Nile waters than for fulfilling real *present* needs. That very contest was driven by a sense of insecurity that the then condition of relative abundance could not be maintained. Thus, whereas Egypt and the Sudan, bound by an agreement, founded their contest for the Nile waters on real needs, Ethiopia was driven by the awareness of its future needs and, therefore, was not ready to risk her unutilised water resources (Tilahun 1979).

Given the then imperatives, the pre-1990s context was characterised by either engaging in bilateral arrangements for the Nile, namely the 1959 Egypt-Sudan agreement and the 1953 Egypt-Uganda agreement for the operation of the Owen Falls Dam (Waterbury 2002:12), or otherwise by not engaging in such arrangements while protesting as the Ethiopian stance, or simply maintaining a state of indifference as among some other riparians (for details see Waterbury 2002). While Egypt and the Sudan see their 1959 “Full Utilisation of the Nile Waters” agreement as the foundation for any future agreement among all riparians, the other riparians, especially Ethiopia, Kenya, and Tanzania call for a new arrangement. The Nile riparians, according to Waterbury (2002:15), ‘face a collective action problem’. Absence of a comprehensive agreement for Nile countries yields nothing but feelings of insecurity and mistrust – ‘all national development plans made by one government concerning the use of the Nile will be perceived by another government as a threat to its national interest, and thus a source of international conflict’ (Hultin 1995:38). However, during this period, trilateral and multilateral sub-basin organisations in the upstream have been constructed, namely the Kagera Basin Organisation (KBO), comprising Tanzania, Rwanda, and Burundi and established in 1977, with Uganda joining later in 1981, and the Lake Victoria Basin Organisation, involving Kenya, Tanzania, and Uganda (for more details see Okidi 1997).

In short, the pre-1990s context was one of tension and mistrust, reinforced by a realist conception of international politics and by the dynamics and divide of the Cold War regime, where Ethiopia and Egypt were almost never in the same camp. Initiatives for multilateral cooperation suggested by Egypt were usually dismissed by Ethiopia who considered them covert attempts to secure Egyptian interests (Stroh 2003:102). Sudan under the shadow of the Nimeiri dictatorship was literally absent – having become almost totally dependent on Egypt. An all-basin cooperative framework seemed unlikely to be reached, despite a number of attempts towards that aim. This “old hydropolitical regime” of the Nile Basin was maintained until the early 1990s, when new ingredients started to surface, heralding the new regime of voluntary involvement, as Waterbury (2002) would call it.

Before we detail the new regime of voluntary involvement as is manifest in the NBI, it is important to recall the pre-1990s attempts at cooperation in the Nile Basin for, despite the fact that they embodied lots of hurdles, they represented some practical steps in the long journey to establish a cooperative framework for all Nile

Basin countries. In tracing the events during this period we would like to emphasise the role the Sudan played though it remained mostly contained by Egypt.

To start with, we argue here that within the tense atmosphere of conflict between riparians an evolving rationale could be sensed which ultimately led to the more courageous moves towards cooperation in the Nile Basin. Yet on the issue of cooperation in the Nile Basin, it is not the two poles in Nile hydropolitics, Egypt and Ethiopia, which seem to have taken the lead. Not surprisingly, it was the Sudan – the midstream of the Nile, sandwiched between these two toughest contestants – which was the first to call for a framework to involve all newly independent states of the Nile Basin.

The Nile Valley Plan on which Sudan embarked since ... to solve its conflict with Egypt had its main object of providing for the irrigation needs of Egypt and the Sudan as well as the assumed irrigation needs of the upstream riparians. The plan also suggested an equitable approach of a 'full development of hydro-electric potential in Uganda, Ethiopia, the Sudan and Egypt' (Maged 1981:73). The strategic option for basin-wide equitable cooperation remained the objective of the Sudan despite its signing of the 1959 *bilateral* agreement with Egypt. While Egypt seemed to have been settled with the idea that the upstream states were bound by agreements signed during the colonial era, the Sudan's position was different and reflected its own experience with using Nile water. 'The Sudan, in view of its commitment to an integrated approach to Nile control and development, immediately took the initiative in inviting other riparians to enter into discussions with her and Egypt with a view to determining their share in the Nile waters' (Khalid 1984:12). The Sudan pushed forward this integrated approach within a year of signing the 1959 agreement.

The first meeting attended by representatives of Kenya, Tanganyika and Uganda took place in Khartoum in October 1960. In this respect the Sudan never shared the view floated by some Egyptian authorities that Tanzania (Tanganyika) had no pertinent claim to the Nile water as long as waters allocated to that country are to be used for irrigating areas not within the Nile watershed (Khalid 1984:12).

Sudan's approach showed the potential role this country could play in the future of the Nile. Realistically, Sudan could not antagonise riparians with whom it shared long borders along which communities that are easy to invoke in regional strife have settled.

However, by the late 1960s, at which time the Sudan, totally co-opted by Egypt and its international allies, was primarily betting on rainfed agriculture (Chapter 5). The initiative for practical cooperation involving several riparians fermented primarily in connection with developments in the upstream.

Following the devastation caused by the floods in the Lakes Region in the early 1960s (Chapter 1), the World Meteorological Organization proposed a hydro-meteorological survey of the Lakes Plateau funded by the United Nations

Development Programme (UNDP) (Tafesse 2001:104, Yacob 2004, Swain 2002:301). The hydro-meteorological (*hydromet*) project's main objective was to collect and analyse hydro-meteorological data on the Equatorial Lakes in order to determine the water balance of the Upper Nile catchment and possibly make a prognosis (Tafesse 2001:104, Swain 2002:301). *Hydromet* started in 1967 with the involvement of Egypt, Kenya, Sudan, Tanzania, and Uganda and later Rwanda and Burundi joined in the effort (Swain 2002:301, see Yacob 2004). In other words, *hydromet* involved all riparians except Ethiopia and DRC, which joined as observers in 1971 and 1977, respectively (see Swain 2002). The *hydromet* framework was sustained until the early 1990s, as a vehicle for some other initiatives which took place during this period.

During the 1980s, regional cooperation in the Nile Basin was enthusiastically advocated (for details see Mageed 1981), where Sudan and Egypt were in harmony. In the 1980s, according to Khalid (1984:21-3), the lower riparians, i.e. Egypt and the Sudan presented a draft agreement with the aim of creating a new Nile commission, which would involve all Nile riparians. The objectives of this proposed agreement were to 'treat the Nile as one unit' and 'ensure, in the process, that the rights of respective member states are not prejudiced'. This integrated approach, according to him, was anticipated to bring both tangible and intangible benefits 'which will be reflected in greater regional cohesiveness, a reduction in tension, and perhaps a general atmosphere of goodwill among states'. Conflicting interests, however, hindered this initiative from materialising. With growing suspicion, upstream riparians feared that Egypt and the Sudan would dominate the proposed Nile Basin Commission 'by virtue of their historic and technical experience and their political and economic power' (Collins in Tafesse 2001:105, Yacob 2004). Added to this were the upstream riparians' concern with Egypt's history of unilateral actions and unfavourable attitude towards cooperation and negotiation with them (Yacob 2004). During this period, the position of the Sudan and how upstream riparians viewed it was as primarily coinciding with that of Egypt.

The year 1983 witnessed the birth of *Undugu* (meaning brotherhood in Swahili) – an organisation, which involved in its membership Egypt, Sudan, Uganda, DRC, Rwanda, Burundi, and the Central African Republic, while Ethiopia, Tanzania, and Kenya chose to remain observers (Tafesse 2001:105-6). While the first two countries were in dire need for more water supplies, the rest until that time appeared to have a relaxed attitude concerning Nile waters. In other words, countries had different attitudes towards the Nile water at that time. In the course of 1977-92 the *Undugu* convened 66 meetings, which touched upon a number of issues, however, seldom on the Nile (Yacob 2004, see Tafesse 2001:106).

The *hydromet* project lasted for a quarter of a century without achieving an effective basin-wide arrangement, and with one of the major riparians, i.e. Ethiopia, remaining outside its activities (Swain 2002:301). The year 1992 witnessed the establishment of TECCONILE (Technical Cooperation Commission for the Promotion and Development of the Nile) as an extended version of *hydromet*, with

membership of DRC, Egypt, Rwanda, Sudan, Tanzania, and Uganda, while the remaining riparians, including the newly independent state of Eritrea, preferred to participate as observers (Tafesse 2001:106, Swain 2002:301-2). Besides the issues of environment and water quality, functionaries of TECCONILE included, as an objective, the issue of water sharing. Riparians' equitable entitlement to Nile water 'had been included as an objective when the TECCONILE functionaries drafted and submitted the CIDA-assisted Nile River Basin Action Plan (NRBAP) in May 1995' (Tafesse 2001:106, see Waterbury 2002:173). This certainly represented a major shift, especially in that the plan contained 22 project proposals including conservation, capacity building, and creation of a cooperative framework that was to ultimately resolve water allocation problems (Tafesse 2001:106).

Parallel to the official activities of TECCONILE, another important activity was present in the "Nile-2002 Conference" series, which is part of the effort to create basin-wide cooperation (Swain 2002:302). This started in 1992 with the first conference in Egypt and organised and held annually in other riparians with the Ninth Nile-2002 being held in Nairobi, Kenya, in October 2002 (Mohamoda 2003:23). The evolution of this rationale of cooperation, influenced as it was by a multitude of domestic, regional, and international factors, was ultimately crowned with the Nile Basin Initiative (NBI).

### 10.3 Birth of the NBI and the new regime of the Nile Basin

In fact, the 1990s showed swift moves on the ground that made contention among the Nile riparians even more serious, especially between Egypt and the Sudan (described in Chapter 9); however, a high momentum of cooperation was also evident. Unlike the first half of the 1990s, when nationalist assertiveness and unilateral approaches to utilisation of the Nile waters seemed highly espoused, the co-basin states in the late 1990s adopted a new initiative, i.e. the NBI with the Technical Advisory Committee (TAC) as its technical arm. We argue here that the NBI was essentially a response to domestic environmental pressures; however, its birth was greatly influenced by external factors, involving diplomatic and financial assistance for some upstream Nile riparians specifically in association with their role in achieving regional stability and fighting terrorism. Additionally, the legal discourse on sharing international river waters, which took a more serious turn in the 1990s also influenced inter-state relations in the Nile Basin. Synergies between the domestic and international reshaped inter-state interactions, leading to some significant changes in the status-quo, presumably, providing the Sudan with better chances to pursue its water supply augmentation.

In 1998 the Council of Ministers of Water Affairs in the Nile Basin countries concluded, in Arusha (Tanzania), a broad agreement for sharing and managing Nile waters and endorsed a fresh programme of action. The NBI was formally launched in February 1999, comprising all Nile riparians save Eritrea (Swain 2002:302). A few months later, the NBI secretariat, which superseded

TECCONILE, was officially opened in Entebbe, Uganda (Swain 2002:302, Tafesse 2001:108, Mohamoda 2003). The objective of the initiative was to reach a solution through the *equitable use of the Nile waters* (NBI 2004). Following this was the conference of the Nile riparians in Addis Ababa in May 1999, which added a further step in this direction, with the Nile co-riparians emphasising the *sustainable development of the river* (for details see Tafesse 2000). The issue of equitable water use – the persistent call of upstream riparians, especially Ethiopia – was thus expressed together with the issue of sustainability.

As an outcome of the above moves the Shared Vision of the NBI was born to serve as ‘a transitional arrangement until the member countries agree on a permanent legal and institutional framework for sustainable development of the Nile Basin’ (Swain 2002:302). By the time it became operative, the NBI involved three organs. These are the Council of Ministers of Water Affairs of Nile riparians (Nile-COM), the Technical Advisory Committee (Nile-TAC) and the Secretariat (Nile-SEC) (Swain 2002:302). Nile-COM is the highest decision-making organ, responsible for setting out policy and guidance on issues related to Nile water, while Nile-TAC is responsible for coordinating joint basin-wide activities (Tafesse 2001:109). In short, cooperation among Nile riparians, as a result of pressures of environmental scarcity, seems to evolve steadily towards agreeing on a permanent legal and institutional framework for sustainable development

### **10.3.1 Does the NBI represent a response to the new challenges posed by environmental scarcity?**

The most important observation here is that, actually, it is only when the domestic crisis of water scarcity became serious, leading to tension among the major contestants over Nile water (Chapter 9) that the Nile riparians started to involve themselves in appreciable commitment. At the time of rising demand for water, with countries facing high population growth rates ranging between 2.4 and 3.0 percent annually, ‘simultaneous increase in cooperation can be noticed’ (Stroh 2003:97). Tensions of yesteryear changed dramatically, with unilateral proceedings combined with warlike rhetoric giving way to multilateral cooperation (Stroh 2003:97). Developments in the Nile Basin in the second half of 1999 indicate that the co-basin states felt the pressure of scarcity, a condition increasingly leading to a lose-lose situation, the reason why they opted for cooperation. In fact, against a background of the “water wars” thesis, the NBI could be considered an unusual development – it came about ‘as one major example of co-operation for utilizing the water resources of a river which was, previously, “frequently referred to as a case where conflict over water resources is real”’ (El Zain 2004:618, Mohamoda 2003:33).

Chapter 9 addressed Sudan’s relations with Egypt and Ethiopia. Later this chapter addresses how the cooperation between the Sudan and Ethiopia spilled over to

other Nile riparians, leading to the NBI. To show this shift and whether it was influenced by environmental scarcity we should pose the question of why there was no comprehensive cooperative framework for the Nile riparians, and why such a process, which started in the 1960s, was so slow to materialise. An apparent conflict of interests or polarisation among states contributed to curb cooperation among Nile riparians. This polarisation, in our point of view, is attributed to three main factors. The first is manifest in the influence of the Cold War regime with its realist/neorealist conceptualisation of inter-states relations characterised by competitive identities, nationalist assertiveness and unilateralism and state-centric approaches. The second, closely associated with the first, is manifest in the contradiction in policy orientation between the downstream and the upstream. Desirability of greater neighbour-state cooperation in the Nile Basin was obstructed by existing differences in the political and economic policies which neighbour states pursued (Woodward 1984:162). The third factor behind the polarisation was the differences among states in their perceptions of scarcity (these last two factors elaborated elsewhere (El Zain, forthcoming (b))).

The 1980s suggested that the narrow-mindedness of the Cold War regime and the stubborn adherence to “historical rights” claims should be replaced by a broad-mindedness of equitable sharing of Nile waters. In reality, however, the rhythm of the resource dynamics in the 1990s was, unexpectedly, faster than the evolution of the cooperation rationale in previous decades described above. This was especially true in association with another wave of scrambling for Nile waters, which would hinder cooperation for quite some time to come, by generating further polarisation among Nile riparians.

The changes that occurred in the 1990s cannot be seen in isolation of the wider dynamics in the Nile Basin and the Horn of Africa. The dynamics in the region, in the 1980s and 1990s, asserted different agendas that seem to hammer against the classic designs for the Nile Basin and Horn of Africa. Signs of change are part of the course of events running across the Nile Basin states. According to Waterbury (1979: 78),

[N]o formula is immutable and surely adjustments in the 1959 Agreement will be required. Moreover, it is unlikely that in the next decades sufficient progress will be made toward political and economic integration to assure a stable and harmonious environment for the working-out of new formulae. If this assumption is correct, then the ‘Great Geopolitical Game’ of the Nile Valley and the Horn of Africa, in which Egypt and the Sudan are only two of several actors, assumes potentially dramatic proportions.

The events in the region show that the “Great Geopolitical Game of the Nile Valley and the Horn of Africa” has already begun. The end of the 1980s and beginning of the 1990s saw a change of regime in both of the Sudan and Ethiopia, respectively, the rebirth of a new state, i.e. Eritrea in 1993, and the total collapse

of an existing state, i.e. Somalia in 1991 (see Doornbos 1993:105). That last is the immediate neighbour of two Nile riparians, Ethiopia and Kenya. Two bilateral agreements which involved the three major Nile riparians were signed, one in 1991 between the Sudan and Ethiopia (Chapter 9) and one between Ethiopia and Egypt signed in 1993 (notified below). The year 1996, witnessed the revitalisation of the IGAD, mandated with a greater regional role (Chapter 9) and in the late-1990s a grand framework for the 10 Nile riparians, present in the NBI, was in effective formulation.

Internal pressures and states' responses to such pressures largely defined the driving force of this Great Geopolitical Game of the Nile Valley. This dramatic change in the region came as no surprise. The Sudan's reaction to the environmental scarcity of the 1980s and 1990s, though slow and ambiguous, expresses the magnitude of the crisis this country is undergoing and shows a break with previous regional bindings and positions and the impetus to seek new ones. In all of these moves Sudan was a major player, benefiting from the changes occurring in the upstream. If the population distribution in the Sudan is made to appear as described in Chapter 6 and Chapter 7, in what way does it affect the Sudan's foreign policy, particularly in relation to Egypt and Ethiopia?

Events at the (internal) regional level of the Nile Basin were of significant importance to the 1990s debate. The social effects of environmental scarcity, which the Sudan had undergone, are crucial for understanding this process. External factors such as establishing the "Non-Navigational Watercourse Uses Convention" (detailed later) together with some other intervening factors in the Nile Basin in the 1990s operated as the *sufficient* condition for the establishment of the NBI. The *necessary* condition, in our understanding, was provided by the internal dynamics in the Nile Basin, particularly in the Sudan, leading to dramatic changes in this mid-stream country's foreign policy with regard to its two main contestants for Nile waters. Below we shall detail this "necessary condition" and we shall return to the "sufficient condition" later.

### **10.3.2 Domestic environmental pressures as the necessary condition implying responses**

We argue here that internal transformations in the Nile Basin, resulting from environmental scarcity, made the necessary condition behind the changes which we are witnessing today in the Nile Basin regime. The transformations in the Sudan, compelling it to pursue new policies of augmenting water supply, are particularly important given that it is now this country which endorses the position of a persistent protestor (i.e. Ethiopia) against its own former ally (i.e. Egypt). In Chapter 9 we analysed the reasons that led to signing the agreements of 1991 between the Sudan and Ethiopia, being the first of its kind between them. However, another transformation did occur. Soon after the 1991 agreement between the Sudan and Ethiopia a rapprochement between Ethiopia and Egypt was evident. The two

countries signed the “Framework for General Cooperation” in July 1993, which included reference to the Nile (Shapland 1997:81, see also Woube 1995:18). While reading these two agreements in the light of the “old hydropolitical regime” would provide for a potential conflict among the three major Nile riparians, reading them in the light of the new condition of environmental change yields a different interpretation. To our understanding, the pressures caused by environmental change brought about new reasoning, as manifest in the states of the basin overcoming their emotional ideological reactions and complying with rationality in safeguarding their interests by appreciating the reality they faced on the ground. Ethiopia signed an agreement with another Nile riparian, the Sudan, concerning Nile waters for the first time, save its agreement with Britain more than a century earlier in 1902. Ethiopia now had a keen interest in pushing for a deal, for it was believed that ‘unless they have incentives to develop the hydrological potential of common water resources, countries will avoid participating in joint river basin initiatives’ (Swain 2002:304). Chapter 9 provided ample evidence of the incentive for the Sudan to cooperate with Ethiopia. With the practical entrance of Ethiopia on the scene of debate on legal arrangements for the Nile, which we see as an important event, the previous tensions among riparians are likely to change qualitatively and give way to a condition conducive to cooperation, though with some difficulties.

The importance of Ethiopia and the Sudan in Nile hydropolitics is far above that of all other riparians if they prove to be able to achieve a compromise. This is because it is in these two countries that more water supplies can be sought. The former is the source of the bulk of Nile water and where through storage in dams in its highlands large amounts of water could be saved without the fear of excessive evaporation and the latter is where the river takes shape and, therefore, where most of the projects to increase water supply and flow northwards are to take place. Most important, however, is that any rapprochement between these countries would be serious to Egypt.

Sudan’s actions, involving the signing of the 1991 agreement with Ethiopia (Chapter 9) and the announcement of the National Comprehensive Strategy (NCS) (Chapter 8), exerted greater pressure on Egypt. They probably lessened the chance for Egypt to get more water from upstream and even threatened the current northward water flow.

By signing an agreement with Ethiopia and in the game of who wins the side of Ethiopia, the Sudan in the 1990s seems to have overrun Egypt and pushed her to resort to counter-pressure by signing its own deal with Ethiopia. While the 1993 agreement between Egypt and Ethiopia safeguards the former’s interests (Shapland 1997:81) and ‘discourages Ethiopia from utilising its river basin’ (Woube 1995:18), it actually represents a manoeuvre on the side of Egypt to not leave Ethiopia to Sudan alone. Ethiopia for the first time acquired a special importance as a country to *cooperate* with, not to snarl at. In reality, the reverse has become true: Sudan won the friendship of Ethiopia and Ethiopia fell out with

Egypt, revoking the 1993 agreement. For the longest part of the period since 1991, Sudan and Ethiopia have been closer to each other than either has been to Egypt. However, these developments brought positive changes in the Nile hydro-politics, namely opening the window of cooperation through the Nile Basin Initiative (NBI).

At a time of heightening demand for Nile water in Sudan (Chapter 8), Egypt too is experiencing a heightening of demand for which its measures of recycling irrigation and sanitation water cannot compensate. Sudan's relations with Egypt in the 1990s have been largely determined by this scramble to use the Nile water. Thus, while the Sudan enters the scene of the 1990s under new heavy pressures, Egypt enters the same scene as the most vulnerable among the Nile riparians, if not in the whole world. With 'some 3.2 million hectares of cropland totally dependent on irrigation, and a current water demand that is very near the limits of the supply, any cut of Nile flow would be highly disruptive, if not disastrous' (Postel and Peterson 1996:38, see also Elhance 1999). Besides the frustrating "population explosion" in Egypt, climatic factors during the 1980s are affecting the water supply to this thirsty downstream country. In fact, Egypt's vulnerability has increased to more than ever before; for it is only now that a real reduction of its 1959 agreed share has become likely (Chapter 9), and the Sudan is a crucial player in this respect. Under such circumstances, Egypt will not allow cooperation between the Sudan and Ethiopia to be sustained; and if halting it becomes impossible it would resort to internal measures.

Thus, Egypt, in engaging in large water constructions and considering Sudan irrelevant, paved the ground for ending its strategic alliance with and overcoming the obstacles Sudan creates through opening towards the upstream. However, while Egypt was formulating its policy of ending its strategic alliance with the Sudan, the latter driven by environmental pressures had already sought a new alliance with Ethiopia. This represented the peak of tensions between the two countries and led to serious considerations of other Nile riparians.

Attempts to increase water supply in the three countries represent the key reason for conflict among them. Thus, our argument is that only at the peak of tensions, stirred primarily by the moves of the Sudan in the early 1990s, did the Nile riparians strike a deal in the form of the NBI. Unlike the previous cooperative initiatives among the Nile co-riparians, the NBI is taking place under a different condition characterised by stark environmental scarcity whose social effects have become apparent in all riparians without exception (elaborated extensively elsewhere (El Zain, forthcoming (b)). It is the condition of environmental scarcity in the region, adding a new dimension to the nature of conflicts in the region, that necessitates a regime of management different from the Cold War regime. Cooperation on international watercourses is often the fruit of necessity rather than an option at the disposal of conflicting riparians. Especially in connection with recent environmental changes, cooperation becomes 'essential not only

to avert conflict but to protect the natural systems that underpin regional economies' (Postel and Peterson 1996:43).

At the regional level, the NBI comes at a time when the previous development ambitions started to face critical ordeals. Before the 1980s the reasonably held anticipation of the Nile riparians was to overcome the condition of underdevelopment, forge ahead, and catch up with the advanced societies. The context that gave rise to this anticipation, in our view, was characterised by a tripartite condition of relative (rhetorical) sustainability. First, the prevalence of the development discourse and its promise of steady, uninterrupted development held intact the hope of meeting the demands of the masses and, as well, consolidated the state's ability to mobilise these masses. Secondly, the abundance of natural resources justified the development potential. Finally and directly connected to the previous, a relatively balanced population distribution was maintained by the sustenance of subsistence economies in various regions. This context gave the Sudan and, to some extent, Ethiopia great hopes associated with perceived resource abundance, where the two unmistakably claimed to be the breadbaskets of Africa (on Ethiopia, see Kiros 1993:65) and, therefore, felt secure about achieving food security.

Soon after the 1980s encroached, these hopes were reversed; a new regime in the Nile Basin seemed in the making. The developmentalist state discovered the hollowness of its agendas and was faced by turmoil that questioned its very legitimacy. The development anticipation in the Sudan slowed and shifted from the ambitions of steady development with all its promises of wellbeing to a concern about control and management of crises (Mohamed Salih 1994, Abu Sin 1995, Harir 1994), echoing the resounding sliding of the development discourse replacing it with religion (El Zain 1996b, 2006c)). The development epic gave way, as the ethnic and religious ones came to a position of dominance. Nation-building in the Nile Basin was largely replaced by its opposite. Ethnic chauvinists decimated the population of Rwanda and Burundi and religious fundamentalists caused incalculable damage to souls and properties in Sudan (NIF government) and Uganda (LRA rebels). The drive for control over resources, in fact, caused huge damage to these resources, led to endless cycles of violence, disturbed the social integrity of communities, and generated stark instability, which caused the loss of "green water" in several pockets of the Nile Basin. The condition of relative abundance, believed to prevail in the past, is hardly conceivable today. Conflict over resources in the Nile Basin has taken a different path that questions the Cold War regime designs of associating development with a central government responsible for mobilising people around the cause of nation-building. In Sudan in particular this gave rise to a class that is not ready to make compromises with Egypt over Nile waters, branding its animosity with religion. This class aspired for more Nile water, moving Egypt from the White Nile to the Blue Nile.

The drought conditions, which represented the opportune climate for the agribusiness class to speculate on scarcity and generate greater fortunes, also had

their impact on how states see their fortunes/misfortunes. The social effects of environmental scarcity implicates all the Nile riparians in new problems (for details see also Okidi 1997) and therefore necessitates due consideration of a new formula to share Nile waters. We noticed that the severity of the environmental stress in Africa has affected states' behaviour and led to inter-state initiatives and states' groupings with the aim of controlling drought (Chapter 9). As a corollary, drought has become an important agenda item affecting these states internal and external policies. Due to commonly felt crises, the Sudan has increasingly interacted with its African kin, coming closer especially to Ethiopia (Chapter 9). Even Egypt has now opened its eyes to the facts set on the ground by droughts and sought further cooperation with the upstream states. In the words of Stroh (2003:99), along with Bulloch and Darwish, 'Since the water volume of the Nasser reservoir fell to a third of its usual level all Nile Basin countries became aware of the impending water crisis. Especially Egypt realized its dependency and its vulnerability.'

Most dynamic in the Nile Basin in response to these environmental changes seemingly are the mid-stream (i.e. the Sudan) and parts of the upstream, particularly Ethiopia. Important in connection to this period is that which Egypt has done its utmost to prevent, i.e. the rapprochement between the Sudan and Ethiopia, which took place in the early 1990s (Chapter 9). The Sudan during this period, particularly under the influence of the agricultural lobby, changed its characteristic reconciliatory approach to Nile politics, which almost throughout the three decades before the 1990s had been in contrast to the confrontational approaches of Egypt and Ethiopia. The Sudan entered the scene of the 1990s as an ally of Ethiopia. Egypt now faced a former ally reconsidering its position due to the harsh environmental scarcity it encountered. Egypt would for some time lean on its old strategies of asserting rights to more Nile water by creating facts on the ground – more desert reclamation for irrigated agriculture – leading to further contention between "historical" and "natural" rights. Contention, at this stage, is not a mere scramble for future shares, as noted earlier; rather, it is associated with the apparent condition of scarcity and the urgent needs it implies. States' actions were necessarily moves to combat hunger by achieving food self-sufficiency, particularly in the Sudan and Ethiopia. Ethiopia's food security discourse is elaborated elsewhere (El Zain forthcoming (a)(b)). These real needs and demand for Nile waters escalated the tension between Egypt on the one hand and the Sudan and Ethiopia on the other, especially after the change of regimes in the Sudan and Ethiopia in 1989 and 1991, respectively.

According to Swain (2002:298), in the early 1990s Egypt started to face the real threat to its water supply by Ethiopia, which needed more water for its own use in response to its rapidly growing population and increasing food demand. However, as the previous chapters detailed, it was the Sudan which took serious steps that threatened Egypt. Sudan not only moved closer to Ethiopia, but also made the latter its new ally in international considerations.

Egypt then reinforced its “warning” language and was increasingly portrayed in the literature on the Nile as having an aggressive attitude towards upstream riparians. Yacob (2004) notes that in 1991, Egypt’s minister of defence reiterated that his country might use force to protect its supply of Nile water, though he considered such an option to be the last resort. Yacob continues to say that this warlike attitude of Egypt was reaffirmed in 1992 when a report on “external dangers” was presented by what he described as the internationally known water expert, Hamdi El-Taheri, to the Parliamentary Selected Committee on the Nile. This committee, as Yacob notes,

[was] advised of Egypt’s vulnerability in Sudan should the southern part of the country split off; that would have a direct effect on the future of the Jonglei Canal project, already halted because of civil war. Dr el-Taheri’s report was subsequently presented to a special session of the Egyptian parliament, amidst shouts of “when are we going to invade Sudan?” and “why doesn’t the air force bomb the Ethiopian dams?” from the Egyptian Deputies.

This was a few months or at the maximum a year after signing the 1991 agreement between the Sudan and Ethiopia. In fact, Egypt during this period started to camp Sudan and Ethiopia together as a combined threat to its security and these two seem often to act in harmony in their relation to Egypt. By engaging the “parliament”, Egypt’s warlike attitude acquired stronger endorsement and certainly pointed to a rather unusual development. It was essentially meant to prepare the ground for invading the Sudan, an action which was carried out soon thereafter on limited scale in the Halayib Triangle in north-eastern Sudan. We already detailed relations between the Sudan and Egypt in the 1990s (Chapter 9). The dispute between Egypt and Ethiopia also escalated when the former in the early 1990s, ‘successfully blocked the African Development Bank from assisting Ethiopia financially with its proposed water development projects’ (Swain 2002:298, Tafesse 2001:91).

In the years following the change of regimes in the Sudan and Ethiopia, i.e. in 1989 and 1991 respectively, Egypt engaged in feverish desert reclamation projects which required huge amounts of Nile waters, which Sudan might have seen as an indicator of risk to its unutilised quota flowing as “water-on-loan” to Egypt. For its part, Ethiopia had its own resentments. Earlier in 1993 the Sudan and Ethiopia criticised what they considered Egypt’s diversion of the Nile water to Israel as part of the Northern Sinai Agricultural Development Project (NSADP) (Bleier 1997, Yacob 2004). NSADP started in the late 1970s and Ethiopia remained a permanent critic of it (Waterbury 2002:49, Lindholm 1995:87), while Sudan had only lately backed Ethiopia in this respect, primarily after it suffered the impacts of environmental scarcity.

Sudan and Ethiopia saw great risk in selling or diverting any Nile water to Israel because the decision sets an undesirable precedent and because once Israel begins to

take water from the Nile it may compete for larger shares in future. If Egypt has water to spare in Sinai, Ethiopia and Sudan felt the water must first be offered to the other Nile riparian countries for desperately needed development projects in the Nile Basin (Yacob 2004, see also Bleier 1997).

While they appealed for legal changes towards “fair” and “equitable” shares, respectively, the Sudan and Ethiopia also tried to set facts on the ground. Sudan’s demand was driven foremost by the social effects of environmental scarcity, but partly by fear of risk to its unutilised quota. Sudan’s NCS (Chapter 8) in this respect put an end to any possible claims by Egypt on unused water from Sudan’s quota. On the other hand, Ethiopia not bound by any water-sharing agreement with downstream countries, and appealing to its sovereign right to use waters within its borders, unilaterally developed a plan of diverting waters from the Blue Nile for its own projects, taking no cognisance of downstream objections (Swain 2002:298). These non-concerted *unilateral* state actions generated more conflict. ‘If no satisfactory agreement can be reached it seems possible that the upstream countries will go ahead with projects of their own to produce a new de facto division of the water of the river’ (Beaumont 2001:8). However, moves by the Sudan and Ethiopia seem to have compelled Egypt to retreat at the peak of its assault.

Egypt’s relations with the Sudan during the 1990s deteriorated dramatically (Chapter 9) and those with Ethiopia continued to sour, especially in the late-1990s. Even under the promising atmosphere of the NBI process, relations soured again and again. In 1999, Ethiopia’s declaration that it would build a dam on the Blue Nile River, according to Yacob (2004), ‘elicited a threat from [President] Mubarak “to bomb Ethiopia.” However, the Ethiopian government considered these threats as an “irresponsible instance of jingoism that will not get us anywhere near the solution of the problem” and “there is no earthly force that can stop Ethiopia from benefiting from the Nile.”’ (See also Tafesse 2000).

In the late 1990s, Egypt amended its relations with the Sudan; however, the latter seemed never to compromise its demands for Nile waters. In fact, Sudan’s demand for modifying the 1959 agreement continued, even when the two countries apparently, since 1999, resumed a friendly relationship between them. Thus, for instance, while Egypt was struggling together with the Arab League to make Sudan avoid the UN Security Council sanctions, a number of Sudanese members of parliament were calling for the modification of the 1959 agreement, which they considered unfair towards the Sudan (*Al-Sahafa* 20 October 2004) – the most irritating call for Egypt. One parliamentary member, Ibrahim Nayil Eidam, asserted that the agreement should be revised immediately, and wondered why Egypt never surrenders its rights while the Sudan does and accepts injustice being done to it. In his view, the agreement should be revised so as to protect the rights of future generations. Another member of parliament, Abdelrahman Al-Fadni, notes that desertification is building a siege around the Sudan; hence, there is need for new irrigation schemes and this implies revising the 1959 agreement, a

view shared by a number of other parliamentary members (*Al-Sahafa* 20 October 2004). What is noticeable in these arguments is the emphasis on environmental changes and the need for sustainable use of the water resources.

Egypt's excessive power, reshaping its aggressive attitude, what Tafesse (2001) calls 'stubbornness', added to Sudan's dependence on it and Ethiopia's fund deprivation actually generated "water poverty" in the Nile Basin. The continuation of this hydropolitical formula meant generating stark scarcity and therefore acute regional instability, which could have negative effects on all countries including the seemingly politically stable Egypt. It might even have international repercussions due to the chaos that persistent instability may induce, including mass cross-border migrations, creation of safe havens for terrorists, and the bringing to power of fanatic regimes that may carry out policies of ethnic cleansing and genocide.

The rapprochement between the Sudan and Ethiopia, as detailed later, made Egypt more willing to revise its highhandedness and historical concessions – agreeing to Ethiopia's development of its Nile water resources. However, this was informed by what we consider to be the sufficient condition for the emergence of the NBI.

### **10.3.3 External concerns as sufficient condition for the success of the NBI**

Instability in the Nile Basin countries, resulting largely from domestic environmental scarcity brought a global component in the discourse around the Nile – a security concern, which involved influential international actors seeking to overcome this scarcity collectively in collaboration with upstream Nile riparian states. Egypt's position as well as some other upstream riparians changed in association with other intervening factors, both at the regional and global levels. One was the shift in the modalities of the Cold War regime. Aspects of this shift were observed by many analysts of the Nile hydropolitics who accordingly advocated a reconsideration of the previous perceptions that shaped the relationships among the Nile riparians. Yahia Abdel Mageed (1994), a Sudanese international water expert, suggested that the post-Cold War condition would bring a new thinking in dealing with the issues of the Nile waters. Abdelmalik Owda (1999), an Egyptian expert, reflected on the assertion of a new agenda of environmental protection and a shift in strategy of international actors towards the Nile Basin. A number of Ethiopian experts (see, for instance, Tadesse 1998, Wolde Amanuel 1997) emphasised ecological considerations in connection with the Nile and asserted the necessity of environmental protection while appealing to the principle of equitable water sharing, and advocating for change in the old attitude of the Nile riparians. However, while these changes were reflected in the behaviour of the principal contestants over the Nile water, in this scenario the Sudan was the most important player in generating the conditions which would weaken the hydropolitical position of Egypt, while giving more weight to the upstream coun-

tries. The chaos in the Sudan to which Egypt contributed by backing authoritarian military regimes, including its being the first to recognise the NIF military government in 1989, slipped out of Egypt's claimed control of the Sudan. From then on it was the Sudan, not Egypt, which seem to reshape relations in the region, both as rogue and friendly to its co-riparian states. The task of containing the Sudan assigned to its upstream neighbours, gave the latter a greater role, earning them both diplomatic support and financial and economic assistance.

### *The task of containing the Sudan*

During most of the 1990s, the Sudan asserted a hostile attitude towards most of its neighbours (Chapter 9), including Egypt. With regard to the latter, this not only jeopardised the "united front" with the Sudan, but even made the situation worse for Egypt by, directly or indirectly, furthering the engagement of the upstream riparians – the potential enemies, namely Eritrea, Ethiopia, and Uganda, in international diplomatic and security arrangements. In other words, the task of containing the Sudan (i.e. Egypt's former ally) fell to them, including putting military and diplomatic pressure on the government of the Sudan. '[I]n response to what was held to be an Islamist threat to their sovereignty, Ethiopia, Eritrea and Uganda stepped up significantly their military assistance to the SPLM/A, and by late 1995 were sending their armed forces into Sudan' (ISS 2004:3). Related to this was the enormous pressure placed on this government as well as on its main opposition, the SPLA/M, 'by the IGAD countries under the leadership of Kenya, and the "friends" of IGAD – Norway, Italy, Britain and the United States of America' (WCC 2004, see also ISS 2004). The involvement of the friends of IGAD and of the United States (detailed below) actually showed the increased concern of the international community in the regional instability the Sudan's Islamist government was causing, which necessitated a more serious involvement in containing it.

The task of containing the Sudan actually furthered the engagement of the upstream riparian states in more effective diplomatic and security arrangements with some possible gains in the Nile front. Such engagement greatly irritates Egypt. Thus, during the early 1990s, when Sudan (the midstream) was notorious in causing regional and international instability and abuse of human rights and engaging in destructive civil wars which should have obstructed its irrigation plans, three riparians surrounding it (Eritrea, Ethiopia, and Uganda) gained in regional importance. According to Waterbury (2002:7), 'the leaders and governments of Eritrea, Ethiopia, Uganda, and, after the end of the near-genocide of the Tutsi in Rwanda, the government of Paul Kagame in Rwanda, were hailed as a new force of young leaders with new agendas of market-led growth and, one day, democratic institutions'. Because of these concerns but also because of regional and international stability, these countries became crucial in the international security chain defined along the interests and leadership of the United States.

The United States, emerging from a bloodying in Somalia, from costly and desperate efforts to alleviate famine in the Horn of Africa, and from witnessing the slaughter in Rwanda, fastened on this leadership as the foundation of stability and growth in the Horn and African Great Lakes regions. In addition, it was leadership that wanted to contain the military Islamic regime, led by General Omar Bashir and his mentor Hassan Turabi, that had taken power in the Sudan in 1989. There was a possibility that U.S. policy objectives in the Horn and Lakes regions might even have led it to *back Upper Basin demands for use of Nile water, in the name of famine prevention and economic stability* (Waterbury 2002:7, italics added).

The upstream riparians of Eritrea, Ethiopia, and Uganda maintained their good image for some time, even after they partly frustrated the associated expectations. ‘The power asymmetry on the political, economic and military level is shifting to the benefit of the upriver riparians’ (Stroh 2003:101).

Meanwhile, Ethiopia gained in relative stability. It rid itself of a big source of headache – the lengthy war with Eritrea, which was settled with the latter becoming a sovereign nation through referendum (Waterbury 2002:6). The potential resentment towards other nationalities was also addressed with the new Ethiopian leadership having ‘drafted a constitution to construct an ethnically defined federation for the rest of Ethiopia’ (Waterbury 2002:6). Ethiopia started to regain some regional importance and appreciation, together with some other Nile riparians. Ethiopia increasingly gained sympathy; in fact, even the international community’s frustration at the war with Eritrea proved less harmful than was expected. NGOs now have the opportunity to enter Ethiopia and operate with a large margin of freedom in the areas of reconstruction and relief. This is coupled with an atmosphere of *moralpolitik*, where regional and international actors do not stay silent at scenes of war destruction and the spectre of famine haunting a country. Financially, the previous funding formula significantly changed, with since the early 1990s Ethiopia getting more development aid and investment money.

Following the overthrow of Mengistu in 1991, Ethiopia received a steady flow of aid. It was the largest recipient from the European Union under the Lomé Convention and the second largest recipient of US aid in sub-Saharan Africa (Pollock 1996:15). Funds approved by the World Bank in April 1996 amounted to US \$158 million for the development of social services, while bilateral assistance from the United States, Germany, Japan, Norway, the United Kingdom, and others amounted to US \$496.3 million (Pollock 1996:15). This was recently reinforced with Ethiopia’s effort to lessen its debt burden making some success. In the year 2004, the Paris Club of creditor countries agreed to cancel Ethiopia’s external debt in reward for the reforms it carried out. On 13 May 2004, the Paris Club ‘noted Ethiopia’s “strong commitment” to economic and structural reforms’ (*Sudan Tribune* 15 May 2004). In fact, this is a strong endorsement, especially in connection with the Millennium Development Goals. ‘The statement welcomed Ethiopia’s “determination to implement a broad-based and rigorous economic program which

should provide the basis for sustainable growth and a comprehensive poverty reduction strategy” (*Sudan Tribune* 15 May 2004). The most important aspect of this is that it paves the ground for better relations with other international creditors. Thus, additionally, the statement of the Paris Club noted that ‘a further agreement on new soft terms of World Bank and International Monetary Fund financing as part of the debt agreement will be signed in the coming weeks’ (*Sudan Tribune* 15 May 2004). Ethiopia, thus, is clearly slipping out of Egypt’s grip of influencing international creditors. Most important, its volume of trade with the Sudan is becoming significant and more effective.

Ethiopia proved crucial for the containment of the Sudan – pressure, through supporting the SPLA. The interesting thing, however, is that the party in charge of containing and the one to be contained have recently come to serve one and the same interest expressed externally. Recently, the Sudan and Ethiopia acquired special importance to the United States – they spearhead the effort to drive al-Qaeda out of Africa. Sudan and Ethiopia, together with Yemen, ‘have an intelligence-sharing agreement to counter al Qaeda in the region.’ The CIA sources say that ‘A working relationship with Sudan is particularly vital to our increasing effort to drive al Qaeda out of Africa’. It has been reported that ‘Khartoum has arrested nearly 600 members of al Qaeda. It also has conducted seven joint operations with the CIA against al Qaeda and affiliated groups in the horn of Africa.’ (*The Washington Times* 20 May 2004). Described as a ‘past haven for terrorists’ (*The Christian Science Monitor* 22 September 2003) and traversing the eastern part of the centuries-long smuggling routes of the Sahara which are now considered choice areas for terrorist groups, including al-Qaeda (*The New York Times* 05 July 2003), Sudan acquires more importance for the United States.

Allying with a superpower, independent of Egypt this time, gives the Sudan more weight in regional politics. This was typically true for Egypt’s power in the region – its more than two-decade-old strategic alliance with the United States earned it regional power and reinforced its discourse about the Nile. Moreover, the Sudan, recently found an opportunity niche – the recently discovered oil, which may give it financial independence. Egypt’s old strategies to block international investment in the Sudan are no match for the extraction of oil and the current flow of investment into Sudan. Arab investment has now delved directly into *irrigated* agriculture, an area which Egypt directly and indirectly discouraged for some decades. This investment of multibillion US dollars (Chapter 8), in addition to oil revenue, will certainly improve the functioning of the agricultural sector and facilitate resuming the building of agricultural infrastructure, as described in Chapter 8. Oil in Sudan also lends it strategic importance in relation to international actors, besides boosting its own economy. Sudan is no longer the exclusive niche for exercises of geopolitical power by Egypt.

Uganda has maintained its image of being a success story and certainly this has facilitated a continuous flow of funds to this country, including World Bank support for water constructions (Swain 2002). The fifth contestant, i.e. southern

Sudan, as Waterbury (2002) views it, will receive large funds for reconstruction, rehabilitation, and resettlement (Chapter 8). Southern Sudan may go its own way; it may become a major player in Nile hydropolitics with no sympathy whatsoever with Egypt's interests in the region.

Thus, the global atmosphere seems to influence the positions of Nile riparians, especially the two most "outspoken" contestants, i.e. Egypt and Ethiopia, with the latter and other upstream riparians making increasing economic and diplomatic gains within the opportune atmosphere of *moralpolitik*. Egypt, which maintained rather normal dynamics, in fact had to start facing the reality of living without the American aid, which started to decrease gradually in the period 1998-2002, though slightly (see Mark 2003:11) but also, most importantly, without its backyard; its (presumably) most effective medium of pressure on upstream countries, the Sudan.

Under such circumstance, Egypt certainly cooperates, because it can no longer block funds to other Nile riparians. Additionally, for Egypt, foes might acquire sudden importance. With some improvement in their economies they may turn into good economic partners. Moreover, these very developments would make Egypt rethink its constructed water scarcity. In reality Egypt, according to its water resources minister, 'will not face any crises or water shortages before 2017' (*Sudan Tribune* 04 June 2004), so its involvement in a multilateral framework for the Nile Basin should provide it with another source of aid. It should actually befriend and encourage its erstwhile foes so as to boost some of its economic sectors, including tourism.

#### *International legal developments*

An important intervening factor in the evolution of the Nile regime is the process leading to the adoption of the "Non-Navigational Watercourse Uses Convention" (hereafter, simply the Convention). The changes brought about by this Convention in the late 1990s gave momentum to an interesting debate on the Nile, where Sudan seemed, in pursuit of its public interest, to increasingly distance itself from Egypt while becoming closer to Ethiopia. In fact, the Convention brought to an end or, probably, confused some prevailing "truths" to which countries of the Nile had clung and appealed. Whereas the international legal debate was long concerned with the question of which of the two principles, i.e. "no-harm" and "equitable utilisation" had priority (Wouters 2000, Stroh 2003), Nile riparians took positions and appealed to what would best serve their own interests. Thus, while Egypt and the Sudan, principally, defended their positions in the language of appreciable harm, the upstream states, forcefully represented by Ethiopia, asserted their claims in the language of equitable use (Waterbury 2002:2). The polarisation took the following form:

The fear of the downstream states of the Nile hinges upon the fact that if “equitable utilization” is given more emphasis, Ethiopia would be entitled to a considerable share of the river’s water that could, in turn, reduce the flow of the Nile to both Egypt and the Sudan. Conversely, the “no-harm” rule is considered as the only applicable principle or the one that would be given greater weight, it would end up in protecting the status quo, i.e. safeguarding the rights of Egypt and, to a lesser degree the Sudan, in effect denying Ethiopia its natural right to use the waters of the Nile (Tafesse 2001:70).

This pre-1990s zero-sum game seemed, for a while, to remain intact. Otherwise, the Nile Basin riparians faced the challenge of finding a balance between the upstream riparians’ support for the “equitable use” principle and the downstream, i.e. Egypt’s and Sudan’s, support for the “no appreciable harm” principle (Waterbury and Whittington 1998:98, Tafesse 2001:70).

Occurring during the time when environmental pressures are felt on the ground in all Nile riparians, the Convention somehow alerted all Nile riparians and, in this respect, certainly brought the conflict in the Nile Basin to its peak. However, this is precisely what brought about significant moves towards cooperation. The stalemate caused by appealing to either the “no harm” or “equitable use” principles changed due to the debate associated with the Convention, which started in the early 1990s (Stroh 2003:103). This is because ‘[t]he convention did not give priority to one of the two principles but linked them to each other. Simply: alongside a general obligation to cooperate and exchange data, the Convention established the rule that harm to other riparian states must be avoided. If harm cannot be avoided indemnification needs to be negotiated. In this way, the principle of “reasonable and equitable utilization” is to be observed’ (Stroh 2003:103). Essential to this process is that ‘[n]either side was left with any convincing way to promote the legal priority of their position’ (Brunnée and Toope 2002:152, Stroh 2003:103-4). The influence of this on Nile riparians was significant. According to Stroh (2003:104), the Nile Basin countries appointed a team of experts, almost at the same time as the adoption of the Convention, to work out a framework convention in compliance with existing international law and applicable to the case of the Nile. In his view, the influence of the Convention was clearly reflected in the 1999 NBI “policy guidelines”, which were adopted by Nile-COM, where the two conflicting principles were reconciled such that the ‘subsidiary action programs will build on principles of equitable utilization, no significant harm and cooperation’.

With these important dynamics ongoing, the Sudan is clearly asserting a position different from Egypt while the latter is apparently maintaining the same traditional rivalry with Ethiopia. In the process leading to the voting on the convention, Egypt and Ethiopia were very active and took different positions, especially in connection with the issue of the relationship between the Watercourse Convention and future agreements. For instance, according to Ethiopia,

‘certain provisions of the Convention had to be considered as rules of *jus cogens* and as such could not be derogated [from], by any other norm of international law, including treaty provisions’ (Wouters 2000:4). Egypt, on the other hand, siding with France and Switzerland, ‘insisted that existing treaties should be left unaffected by the new Convention’ (Wouters 2000:4). In the final text of the Convention, which was adopted by the Six Committee of the UN (Working Group of the Whole), Ethiopia, like the Sudan, voted for, while Egypt abstained together with Rwanda and Tanzania (Wouters 2000:4). Thus, the voting positions of Nile riparians show a confusing process, in which we find should-be benefiting riparians taking the position of should-be losing and vice versa.

The UN General Assembly adopted the Convention in 1997 with 104 member states voting in favour, 3 member states standing against, 27 abstaining, and 33 absent (Wouters 2000:7, see also Tafesse 2001:68, for the Convention text see UN 1998). In fact, Nile riparians’ positions during the deliberations over the Convention show an interesting dynamic – an unusual case. On this river of 10 riparians only two states (Kenya and Sudan) voted in favour of the Convention; one riparian (Burundi) voted against (along with only two other states in the world, i.e. Turkey and China); four riparians (Egypt, Ethiopia, Rwanda, and Tanzania) abstained, and the remaining 3 were absent. In fact, few river basins in the world witnessed such diverse positions of their riparians. More striking is that the seven Nile riparians that either abstained or were absent make this river again a special case. No international river in the world had this large a portion of its riparians abstaining and absent. Most important, however, while Sudan together with Kenya sought a well-defined regime for the Nile system, Egypt and Ethiopia playing their cards secretly found themselves in the same camp of betting on another future arrangement. Egypt ultimately sat with its most difficult foe.

Besides the influence exerted by the debates on the Non-Navigational Watercourse Uses Convention, the NBI process was influenced by other international institutions and a number of multinational and bilateral donors. In 1997, at the request of Nile-COM, the World Bank accepted the role of coordinating the basin-wide cooperation effort in partnership with the UNDP and CIDA (Mohamoda 2003:23). These efforts cropped in the NBI, which ultimately changed the status-quo. The Sudan, in this respect, gained in that the NBI changed the status-quo but importantly it gives greater chance for Ethiopia to develop its Nile; or, in other words, serving Sudan’s new foreign policy towards Ethiopia.

So far we have examined the possible effect of environmental scarcity on changing riparians’ attitudes in association with the regional and international conducive environment for investment. The following section examines whether the NBI provides for a framework, which allow for seeing different components of the system through decentring the larger Nile Basin into sub-basins and whether this helps the Sudan’s pursuit of increasing its water quota.

#### 10.4 De-centring the “Nile Basin”: The sub-basin approach as adequate response to environmental scarcity

Does the NBI represent an *adequate* response to the social effects of environmental scarcity? The tentative answer, in our view, would be yes, though only a partial one. This is precisely and most importantly because the NBI has initiated the first step towards de-territorialising the Nile Basin, or, more precisely, de-centring it. The NBI would prove an adequate response if it allowed for encompassing the specificities of diverse localised ecosystems (Chapter 11) in different watersheds both inside the Nile Basin (the RZ) and outside it in the NRZ.

The mission of the NBI is ‘to achieve sustainable socio-economic development through the equitable utilization of, and benefit from, the common Nile Basin water resources’ (NBI 2000, El Zain 2000, Waterbury 2002:173). This is what makes up the Shared Vision of the Nile riparians. The emphasis on sustainability makes the NBI different from the previous initiatives and importantly because sustainability discourse implies the involvement of a wider range of actors, including powerful international institutions, bilateral donors, and NGOs, these actors operate as mediators or supporters for urgent action in riparians struck with disasters.

Generally speaking, it is not morally acceptable for these actors to see communities in a country that is rich in some resources go hungry almost permanently simply because another country is halting funds which may be used for anti-hunger strategies to save these communities. The NBI is an adequate venue to pursue a sustainable food security regime. Moreover, unlike the previous initiatives, the NBI is a vision shared by all riparians with significant involvement of global partners. It means, in short, that the awareness of the current environmental problems affecting all riparians is finally on its way towards institutionalisation in the Nile Basin.

The NBI emphasis on sustainability gives way to the freshest part in the initiative: the subsidiary action sub-programme. While it forcefully binds the Sudan to a form of regional environmental governance, it makes this country’s 1960s aspiration for basin-wide cooperation possible though, happily, through a more decentralised approach, manifest in its subsidiary action programme. The principle of subsidiarity is considered ‘an important approach to cooperative action within a Basin-wide framework’ and is meant ‘to take decisions at the lowest appropriate level, to facilitate the development of real action on the ground’ (NBI 2000, El Zain 2000). In our view, this part is what has made space for an alternative development imagination by de-centring the definition-making and decision-making about the Nile waters, which has always been the monopoly of central governments or bodies representing them (El Zain 2000). If translated in line with genuine sustainable development ethos the subsidiarity principle will help establish a habit of looking into local watersheds, appreciating indigenous knowledge of communities therein, and involving them in participatory water management strategies. ‘In order to translate the shared vision into reality, two Subsidiary Action Programs are being formu-

lated: one for the eastern Nile region consisting of Egypt, Sudan, and Ethiopia, and one for the Equatorial Lakes Region' (Swain 2002:302).

Because of the states' incompatible interests in developing the Nile, scholars have viewed this sub-basin approach as a necessary step to lay a firm foundation for future basin-wide cooperative arrangements (Swain 2002:303-304, Dagne *et al.* 1999:236, Waterbury 2002:25). Indeed, the sub-basin level may provide the proper unit of analysis, for at this level, the players are likely to be fewer, the cost and benefit asymmetries somewhat less, and the coordination challenge simplified (Waterbury 2002:25). Categorisation according to the sub-basin level puts together those with similar interests in terms of degree or type, rather than lumping those who want to control floods with those who plan to augment water supply. This put together in almost permanent dialogue those foes which had been in enmity for decades. Egypt, courted by the international aid carrot, is certainly toning down its long deafening snarling at Ethiopia. 'Any initiative to achieve basinwide cooperation in the Nile Basin will not be successful without first finding a formula for the active cooperation among Egypt, Sudan, and Ethiopia' (Swain 2002:305). In fact, the eastern Nile region represents the most contentious area in the whole Nile Basin, namely the Blue Nile, which is witnessing rapid population concentration – the area where Sudan's and Ethiopia's interests coincide (Chapter 9). International support, in Swain's (2002:305) view, 'should therefore be directed toward water management issues in this core area. A comprehensive approach to address the water issues at the basin level can be taken as the second step, only after achieving strong and institutionalized riparian cooperation at the lower basin level.' The building of sub-basin level institutions and regimes, according to Waterbury (2002:25), 'may be the stepping stones to basin-wide understanding'. This serves the Sudan's interest to the best and breaks the manipulative strategies of Egypt. The sub-basin approach of the NBI blocks uncooperative manoeuvres, such that a powerful riparian might manipulate weaker ones who are rather indifferent about the Nile, in order to impound funds from a needy riparian. For the first time, the Sudan, Ethiopia, and Egypt seem to be equal in pursuance of their water interests. While the greatest direct beneficiary in this atmosphere is certainly Ethiopia, the Sudan indirectly gains the more Ethiopia becomes capable of achieving a degree of economic and political stability – reducing refugee flows and engaging in constructing dams that may reduce silt and floods.

The economic gains and the waning of the ideological tensions are advantageous for Sudan; as it relieves it from the ideological burden and "emotional" sympathy with its "rationalist" neighbouring riparian, Egypt. The NBI in this respect provides an opportunity to make swift moves with the essential goal of achieving sustainability. Through multilateral cooperation, Sudan can overcome its perceived dilemma – caused by its being bound by the 1959 agreement with Egypt, while its interest lies with the latter's foe, i.e. Ethiopia (for details see Tafesse 2001) – and reconcile its conflicting interests with its two strategic neighbours. According to Stroh (2003:106) multilateral cooperation, such as provided in the NBI could

have great advantages for the Sudan. In his view, the Sudan could make use of both options of making advances in flood control or exchange of data with Ethiopia without having to give up its strategic cooperation with Egypt. He also notes what has now become a reality, that the participation of third parties in the NBI process increases Sudan's chance of attracting foreign capital (Stroh 2003:106-7). The large financial capital which entered the Sudan in recent years was discussed earlier. Similarly for Ethiopia, the multilateral alternative seems more promising, for it will resolve the issue of finance, necessary for extension of its irrigated sector and developing hydropower. Ethiopia can benefit from the technical expertise of international organisations and of donating countries (Stroh 2003:107).

The NBI as a comprehensive cooperative framework provides for significant changes in the old hydrological formula that, in our understanding, essentially would protect the co-riparians from inflicting harm on each other.

Important to the NBI is that it has come at a time when issues of high politics, which operated as diseconomies, typically the case of the relationship between the Sudan and Ethiopia, have started to shrink in influence. The proponents of environmental security see that the current global condition is radically different from that of the Cold War era. In their viewpoint, the imperatives of the old geopolitics (with its emphasis on national security) have given way to environmental geopolitics (with its emphasis on environmental security). The superior modality of the Cold War geopolitics with its strategic imperative and military threat was replaced by a less superior modality characterised by the absence of military threat and the threat being perceived as an environmental one (Porter 1998) that necessitates cooperation at regional and global scales. Under these circumstances, collaboration among states is considered both necessity and a better means of achieving their goals. As Mikiyasu Nakayama (1998:184) argues, states need to collaborate in order to preserve the environment besides achieving other interests. One major factor that is assumed to contribute to development, according to him, is aid, which states through cooperation may collectively obtain more than if they seek it individually. Certainly, including the "powerful" co-basin state of Egypt, all Nile riparians need aid, especially for developing water projects. 'The Nile basin may be considered an ecological unit by many, but the only common ground between the states concerned is a greater or lesser dependence on international aid. No hydraulic works can be financed without external funding which takes into account consequences for co-riparians' (Beschoner, cited in Stroh 2003:106). In this regard, Nile-COM's request for the World Bank and its partners to host a consultative group – an International Consortium for Cooperation on the Nile (ICCON) – as a forum for seeking funds (WB Group 2004) is a significant move towards emphasising the economic imperatives, essentially through providing funds which otherwise would not be available.

ICCON, coordinated by the World Bank with the intention of promoting transparent financing for cooperative water resources development and management, was formally launched in Geneva in January 2001 (Swain 2002:302).

Donors at the meeting in Geneva ‘pledged to raise an initial amount of \$140 million and expressed a strong support to finance the first phase of investment program, which is expected to reach \$3 billion’ (Swain 2002:302). They generate incentives and, more importantly, realise projects which riparians so far have not been financially able to implement. Significantly, this generates the momentum for cooperation for sustainable development in contrast to competition.

While competition over international water can be seen as an exercise of nationalist assertiveness, cooperation, on the other hand, can be seen as a response necessitated by the nature of the international river and its cross-border imperatives, where problems occur at the local, national, and regional levels, therefore, implying global scale international cooperation for their solution (Uitto 1998:55). It is a move from political relations that essentialise the borders (and necessary territories) of states to ecological ones that essentialise interaction between the river’s localised watersheds and between them and the NRZ watersheds intersected with global concern for sustainability, which has led to the seeking of multilateral forums for cooperation in the Nile Basin. That last, according to Stroh (2003:106), has ‘ultimately led to the slow growth of mutual interests, which are a necessary prerequisite for any cooperation’.

Yet the NBI has generated its own dynamics, which to our understanding changes the status-quo much further. The NBI has brought money – funds for small, medium, and even large-scale water works projects – and this in itself makes riparian states more competent in claiming water rights in order to benefit from these largely water-resource development-related funds. This, in fact, will help actualise Sudan’s strategic goal of changing the status quo as the best means to pursue its water supply goals.

What the Sudan and Ethiopia wanted to achieve, i.e. a new arrangement for equitable sharing of Nile waters, seems to go on so steadily, including neutralising or rallying Egypt’s former ally, Uganda behind them. The latter will join a more serious discourse of its sub-basin co-riparians of East Africa aiming at changing the status quo too. The most important thing to note here is that the very dynamics initiated by the NBI seem to bring about a clear end to Egypt’s monopoly of the Nile and its pattern of allying with some riparians and using them to victimise or threaten others. Present in the East African riparians’ moves, the Sudan’s strategic goal of changing the current water-sharing formula, necessarily involving all East African riparians, seems now to work out perfectly. The beginning of this century added more to the “hard-line” of Ethiopia – a strong position by East Africa riparians, which invites some details here. In fact, since 2001 the situation in the Nile Basin has become even tenser, with the East African riparians previously perceived as “relaxed” becoming troublesome. East African countries have grumbled for years about the 1929 treaty, which they consider to have been crafted merely to serve British interests in Egypt (*Ethiopia Tecola Hagos* 15 January 2004). Their ‘wait-and-see attitude’ (Waterbury 2002:33), however, seems to have undergone significant change (see Stroh 2003:107).

In October 2001, the Kenyan parliament demanded a re-negotiation of the 1929 Nile Waters Agreement. Under the title 'Yes, let's review River Nile treaty', John Kamau wrote, 'Kenyans should not be bound by a treaty they did not sign in some distant past.' Challenging what has been considered the unquestionable facts about the sources of the Nile, he continued, 'If we are to re-examine the treaty, we must approach it from a point of knowledge. First, Lake Victoria is not the source of the Nile and that gives the East African nations a starting point in seeking a right to use the waters of Lake Victoria for irrigation or any other use' (*The Nation* 19 October 2001). Importantly with reference to this position is not whether Lake Victoria is the source of the Nile. In fact, it is the re-assertion of the need for water that provoked such a debate; interestingly, it arises at a time when many optimists thought the Nile countries had gone far in establishing understanding and cooperation through the NBI process. In fact, some pockets in Kenya, as well as in other Lakes' riparians, are exerting pressure on their governments to consider issues of food security whose sustainability is strongly tied to irrigation from the Nile.

Suffering from recurrent droughts caused by deforestation, soil erosion, and erratic rainfall, Kenya 'says the 1929 treaty should be replaced by alternative arrangements that will allow it to expand irrigation and develop hydroelectric plants' (*Sudan Tribune* 17 March 2004). Kenya, the country that invoked this debate, increased its irrigated area by 67 per cent in the 15 years between 1984 and 1999 (Table 11.11). Kenya's economy is improving and its new political atmosphere is encouraging for new development ventures, even for strategic ventures, which may include reshuffling the old team of regional allies. Kenya has six streams which flow into Lake Victoria, carrying around 6 billion m<sup>3</sup>, and it could go as far as consuming all of their flow in the near future.

In the current Kenyan parliament the issues of the Nile are coming more forcefully to the fore. Kenyan parliamentarian, Paul Muite, was quoted recently as saying to the parliament, 'Kenyans are today importing agricultural produce from Egypt as a result of their use of the Nile water' and wondering '[w]hy shouldn't we use the same water to grow fruits in our country?' (*Sudan Tribune* 16 January 2004). It has been argued that the 'grumbling' of East African countries about the 1929 treaty 'became a roar last month' when Kenyan Assistant Minister for Foreign Affairs, Moses Wetang'ula, said his government 'considers the Nile Basin Treaty invalid and is seeking a new arrangement'. His strong words and method of seeking a new deal were clear. 'Kenya will not accept any restrictions on the use of Lake Victoria or the River Nile.' Yet Kenya 'does not wish to be a lone ranger in deciding how to use the waters, and has consequently sought the involvement of involved countries' (*Sudan Tribune* 16 January 2004). Kenya, as we shall see below, has its two East African Nile co-riparians, Tanzania and Uganda, on its side.

However, as we may expect, Egypt reacted immediately, with its Minister for Water Resources, Mahmoud Abu Zeid, responding that 'Kenya's statements

were “a declaration of war” against Egypt’ (*Sudan Tribune* 16 January 2004, Yacob 2004). The minister accused Kenya of breaching international law by opting out of the 1929 treaty (Yacob 2004). He went further to threaten political and economic sanctions against Kenya, noting that it ‘could “not lay claim to sovereignty to protect itself from any action that Egypt may want to take”’ (*Sudan Tribune* 16 January 2004, Yacob 2004). He hinted that Kenya would suffer if Egypt and the other nine riparians decided to punish it for quitting the treaty (Yacob 2004). In other words, the minister declared his own war against Kenya.

In connection with these wrangling, it is important to understand why Egypt’s reaction is so steadfast. Why shouldn’t it seek an approach other than the “war” wording? Kenya’s move threatens Egypt’s greatest of assets – the colonial legal guarantees of uninterrupted flow of the river. ‘Kenya’s contribution to the Nile waters is negligible but Egypt fears that if Kenya disregards the Nile Basin Treaty others will follow’ (*Sudan Tribune* 16 January 2004). The interesting thing is the unchanged appeal to a legality of the agreement under rapidly changing circumstances which may compel other “signatories” to pull out of it, as the Ugandan Attorney General would assert referring to the same treaty (detailed below). The core of Egypt’s concerns seems not whether upstream riparians make water constructions; in fact, it is their insistence on changing existing legal codes that Egypt, on its part, considers binding. It is all about legally defined quotas – legally guaranteed flow of the river. It is also a position of not risking its yet “unutilised waters”, and this necessitates uttering some threats.

The same threats that in the past took the Nile Basin nowhere are reiterated every now and then. They neither let cooperation flourish nor stop action on the ground. Tanzania this year launched a new project which will take considerable water from Lake Victoria (El Zain forthcoming (b)). Legislators in Tanzania, which is currently in the midst of a severe drought, have tabled proposals, similar to those of their Kenyan counterparts, for quitting the 1929 agreement (*Sudan Tribune* 16 January 2004). Its long delayed plans and the current ones actually require considerable amounts of water from the Nile system (El Zain forthcoming (b)).

The co-riparians to least agitate the Nile waters recently sent splashy waves northwards. On the move now is Uganda, described by Waterbury (2002:150) as ‘Egypt’s unwilling ally’, which together are for maintaining the status quo, in contrast to Ethiopia and the Sudan which seek to change it. ‘Uganda has resented Egyptian hegemony, or at least high-handedness, in the Nile basin as much as any other riparian, but it has been locked into its alliance with Egypt by the two countries’ objective, shared interests’ (Waterbury 2002:151). A Ugandan, W. Kintu Nyago (*The Monitor* 21 October 2003), in October 2003, called for placing Nile waters on the agenda of IGAD talks, asserting what we can call a *moralpolitik* discourse. He states, ‘If we are to effect our Poverty Eradication and Alleviation Project, and the Plan for Modernisation of Agriculture, the question of the use of the Nile’s waters requires to be amicably resolved or it will in the near future create an explosive regional geo-political environment’ (*The Monitor* 21 October

2003). Calls have been uttered for initiating ‘an agreeable and peaceful resolution concerning the issue of the use of River Nile waters by upstream Nile Basin countries namely Uganda, Sudan and Ethiopia’ (*The Monitor* 28 October 2003). Mention of the three riparians again appeal to a *moralpolitik*, ‘For in not too distant a future [there] will be need to apply modern agricultural irrigation methods to *secure the required food security* for our people and export purposes’ (*The Monitor* 28 October 2003, italics added). Seemingly, there is a call for a new alliance to involve the three above-mentioned riparians to the exclusion of Egypt. ‘This is a development that Egypt could oppose, basing on iniquitous colonial treaties to which we are bound but which only favour its interests’ (*The Monitor* 28 October 2003). Clearly, the Sudan has a greater chance of building an “egalitarian” alliance with, at least, most of its immediate neighbours.

The Ugandans now understand that there was an option for their country at the time of attaining independence to refuse to ratify the 1953 agreement. But that did not happen because it would have been imprudent for their then-young nation to get into conflict with Egypt (*The Monitor* 08 December 2003). On 20 November 2003 the issue of Nile water entered a more earnest stage with members of parliament taking up ‘this matter for serious address’ (*The Monitor* 08 December 2003). In this recent move, the Ugandan parliament proposed dropping the 1929 treaty in favour of a water-sharing scheme in which Uganda would charge Egypt and Sudan for use of Nile water (*Sudan Tribune* 16 January 2004, *The Monitor* 04 December 2003). The Ugandan parliamentarians ‘argue that already Egypt is selling the waters to Israel without the consent of the Ugandan government’ (*The Monitor* 04 December 2003). The Ugandan Attorney General backed the parliament’s move ‘to urge government to reject colonial agreements binding Uganda on the use of Nile waters’. Appearing before the Committee on Natural Resources, the Attorney General expressed that ‘the Nile Waters Agreement of 1929 and Owen Falls Agreement of 1953 cannot create obligations on Uganda without her consent’. Moreover, he pointed to the precedence ‘that Egypt has not been faithful in keeping its part of the bargain because it has renegotiated her commitment under the agreement with the Sudan’ (*The Monitor* 04 December 2003). For its part, the Ugandan parliament ‘mandated the Committee on Natural Resources to study the validity of the treaties and establish whether they are in Uganda’s national interest’ (*The Monitor* 04 December 2003). Early April 2004 witnessed an important gesture, ‘Ugandan President Yoweri Museveni became the first head of state to enter a fierce debate over the Nile waters, calling on Egypt not to monopolise it’ (*The Monitor* 02 April 2004, *Sudan Tribune* 05 April 2004). Following his ‘opening an international conference on *food security* in Africa’, Museveni stressed that ‘Egypt should sit with us and agree on new arrangements under which we should all share the use of the Nile *equitably*’ (*Sudan Tribune* 01 April 2004, italics added). This could be one step before Uganda too officially declares the invalidation of the 1929 agreement.

The recent wrangling is probably a form of protest against inequitable benefits from the NBI process, an apparent sign of competition among riparians over funds and the like. In fact, there is one well-celebrated aspect of the NBI that requires us to be cautious – the sub-basin approach could create complexities. Waterbury (2002:25) warns that sub-basin institutions ‘may run the risk of intensifying interbasin rivalries if clusters of riparians strike water-sharing deals at the expense of the others’. In fact, the projects launched and probably those that earned some pledges of finance have already created such a situation in the Nile Basin. Recent wrangling is thus not free of such influence and certainly states are expected to react accordingly.

We have noted the grim environmental situation facing the upstream riparians (Chapter 11) and we have detailed the case of the midstream, a situation we consider to force these riparians to challenge Egypt’s control. Countering this challenge, however, Egypt ‘is urging thirsty upstream nations to do a better job of conserving and distributing their own abundant rains’ (*Sudan Tribune* 17 March 2004). According to the head of the Nile water sector at Egypt’s irrigation and water resources ministry, the upstream ‘with the lion’s share of rainfall among Nile Basin nations, will not solve the problem by simply diverting more Nile water for its own use’. In his view, what is badly needed instead is investment and expertise to install more watershed management, irrigation, and water storage systems to maximise precious rainwater (*Sudan Tribune* 17 March 2004). A similar call to take rainwater into account was asserted more than four decades earlier. According to Waterbury (2002:43), ‘in the negotiations leading up to the 1959 agreement, the Egyptians argued that the Sudan had a major alternative to Nile water because of its relatively high rainfall (Egypt has no rainfall worth speaking of). Egypt makes similar argument today with regard to Ethiopia.’ Egypt’s insistence that rains and land remained the same in the upstream is not helpful for dealing with the immediate needs. There seems to be a stark incompatibility in arguments that while upstream countries are crying from the felt bite of droughts and erratic rainfalls, Egypt is shouting at them: “Take care of the rains!” However, the mention of the need to consider the rains is important in itself. Yet it should be part of a basin-wide strategy, including Egypt, which should conduct research and provide funds for regaining the rains (details in section 10.5).

The position of the Sudan in alliance with Ethiopia and the consequent wrangling of East African riparians has changed the status-quo dramatically, including even putting a new agreement on the agenda. Recent debates, however, show that the principle of equity is partly recognised in association with water use rather than as legally defined water quotas. Egyptian Water Minister Mahmoud Abu Zaid states, ‘The basis that we are working on now in the new agreement, is that each country on the river should get equitable *use*’ (*Sudan Tribune* 17 March 2004, italics added). However, this is clearly read in light of the no-harm principle. The minister adds, ‘We should not create projects that will harm others and we should satisfy all the demands of the countries from new projects which can

meet such needs' (*Sudan Tribune* 17 March 2004). "Equitable use" would not replace the upstream demands for a new legal framework. Even Egypt considers this arrangement a necessity. 'Abu Zaid agrees on the need for a new pact but insists Egypt will not accept a smaller portion than it is allotted by the 1929 treaty.' Given that Egypt's share in 1929 was 48 billion m<sup>3</sup>, this means that Egypt would accept less than its current share of 55.5 billion m<sup>3</sup> as specified in the 1959 agreement with the Sudan. Yet this does not mean Egypt will leave every drop of water more to be developed by the remaining needy riparians. Rather, according to Abu Zaid, 'Egypt would need even more Nile water after 2017 because of population growth,' noting that 'if the Nile waters were better preserved it could meet the needs of all along its banks' (*Sudan Tribune* 17 March 2004).

Use of the Nile water now is an important survival strategy, which causes a change in the nature of stakeholders' positions, and which compels riparians to change their previous strategies. Now exposed to wider public opinion, the Nile is not an issue for bureaucrats only. Some practical matters associated with drought-hit groups stand against prohibitive arrangements which states might seek to employ. Tanzanian Water Minister, Edward Lowasa, recently put it aptly, 'How can you tell people living by Lake Victoria who have nothing they cannot use the water?' (*Sudan Tribune* 17 March 2004). This argument equally applies to communities living on the banks of the Nile in the Sudan. Especially if they "liberate" their homeland from government control (Chapter 4), these communities will certainly not wait for the state to issue them licenses to use Nile water. Attention should, therefore, go to their localised watersheds – committed to the spirit of the subsidiary action programme.

## 10.5 Conclusion

This chapter addressed how the Sudan's establishing of closer relations with Ethiopia, originally resulting from its domestic pressures (Chapter 9), first created tensions with Egypt, but ultimately pushed the latter to adopt a more compromising attitude in its relationship with the upstream riparian states, particularly Ethiopia, with which it signed a framework agreement in 1993. The chapter noted how the Nile co-riparian states by the late 1990s seemed to have overcome their collective action problem, which was reinforced by a realist conception of international politics and by the dynamics and divide of the Cold War regime. The change of the Sudan's attitude has in essence not only established strategic relations with Ethiopia, but also brought the other major riparian, Egypt in "dialogue" with Ethiopia, whereas the two were almost permanently in opposite camps of the Cold War divide. The chapter proposed and analysed what it considered the synergy between domestic and international factors crucial for initiating the NBI as a transitional arrangement paving the ground for a permanent legal and institutional framework for sustainable development of the Nile Basin.

While it considered the synergies between the domestic and the international levels as crucial for bringing about the NBI, the chapter emphasised the former as the necessary condition which made change possible and the latter as the sufficient condition. The chapter noted the international community's concern with regional stability in the Nile Basin, making the link between the behaviour of the Sudan in the 1990s (reflecting its domestic politics) and the need for its upstream co-riparian states to contain it. It argued that this role given to these upstream states was crucial for enabling them to make diplomatic and financial gains, including gains related to their Nile policies. The chapter noted that the Sudan and the riparian primarily assigned to contain it, i.e. Ethiopia, have become involved in a regional security arrangement with the United States, specifically fighting international terrorism, which also adds to their regional weight in contrast to Egypt.

The chapter asserted that these changes have brought all the Nile riparian states, save Eritrea, together in the shared vision of the NBI, which functions as a transitional arrangement until the riparian states agree on a permanent legal and institutional framework for the sustainable development of their river. The chapter posed the question of whether the NBI represents a response to the new challenges posed by environmental scarcity by de-centring the "Nile Basin", i.e. with a sub-basin approach being adopted by the riparian states as the adequate response to this environmental scarcity. The chapter noted the new dynamics generated by the NBI process, namely the grumbling of the East Africa Nile riparian, further asserting the changing status-quo in the Nile Basin, with this last being the primary goal that the Sudan and Ethiopia have strived to achieve.

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# 11 Development Priorities for Relieving the Nile from Pressure: Regaining the Rainwater and Augmenting Water Supply for the Sudan

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## 11.1 Introduction

Pressure on the Nile's "blue waters" is increasing and there is scarce doubt that demand for more water will continue to increase in the Sudan, primarily caused by loss of the "green waters" of the NRZ and upstream RZ. The loss of the "green waters" is caused by mass population displacement, discussed extensively in Chapter 6 and Chapter 8, which caused the abandoning of large tracts of productive lands.

According to Bannaga (2001:48), displacement is damaging for the economy as those displaced leave fertile lands behind, which if utilised, could meet the needs of both human and animal population in the Sudan. In most cases, rural population was displaced in large numbers and whole areas such as those affected by the bloody war in the south were depopulated. Bannaga (2001:48) notes that under these circumstances cultivated land is deserted, irrigated canals are destroyed due to loss of those in charge, and the consequence is a demographic vacuum. These reasons are enough to cause a collapse in the pillars of life in rural areas; enough to destroy the rural agricultural economy upon which the state depends to sustain the changing needs of society. The collapse of habitats in Sudan's rural areas has led to the perishing of hundreds of thousands of aquatic species which used to live in the vicinity and within the human environment (Bannaga 2001:48). The most dangerous implication for the Nile water is that the NRZ is becoming increasingly difficult to rehabilitate and the upstream RZ is also being an increasingly contested region that hardly remain safer for its historical inhabitants to remain therein. What is more serious is that if the displacement continues for several years and the displaced would chose to stay in recipient areas their "indigenous" knowledge and how it enhances their social adaptive capacity will be lost. As noted in Chapter 8, the ceasing of the practice of transhumance would be tantamount to surrendering to the desert vast dryland areas that could have contributed to lifting the burden off the river banks, namely because these drylands would have no other possible use. Put it more concretely, there are no other *users* to these drylands other than their historical inhabitants who know how to harvest their resources. This is a recipe, of course, for a "water

poverty” since the most resilient mode of production in those areas is (or will be) abandoned. There is, however, a dire need for a radically different development policy to put things back again to normal. To stand for this rather abrupt challenge, the Sudan has to design robust strategies that target increasing the crop output per unit of water input in both *irrigated* and *rain-fed farming* sectors. This, however, should be pursued scientifically from within the sustainable development framework, including the social, political as well as economic dimensions (for details see Lafferty 1999, Langhelle 1999, El Zain 1999), which essentially implies avoiding the pitfalls of the previous sectoral management.

This chapter proposes four development priorities for the Sudan with the aim of achieving greater hydro-solidarity among localised watersheds in the RZ and NRZ and among Nile riparian states. Each development priority is discussed in a separate section. Thus, in section 11.2, this chapter focuses on regaining the rainwater in drylands ecosystems, taking northern Kordofan as an example. The section emphasises the need for supplemental irrigation, i.e. use of underground or stream water to bridge a serious dry spell to help rain-fed crops in drylands ecosystem survive (SIWI 1999:13), as the best way to “regain” the rains. It, therefore, calls for detailed studies on these localised ecosystems in order to figure out the best irrigation methods suitable to soils of each one. Section 11.3 discusses the importance of political stability and communal participation in managing natural resources and, therefore, in regaining the rains and providing for consensual strategies for developing the “blue water” as well. Section 11.4 addresses the need for increasing the “blue water” supply for agricultural development and, therefore, for food security. It specifies the three options available to the Sudan within a strategy of not antagonising Egypt-not depriving Ethiopia, namely the channelling of the waters of the swamps (to be consensually planned within the Sudan), decreasing evaporation by storing water in the Ethiopian highlands, and Nile-Congo inter-basin water transfer. Finally, section 11.5 proposes a “virtual water” exchange regime with the ultimate goal of achieving greater mutual dependency and ever-increasing integration among Nile riparian states. This section emphasises the role of the Sudan at the heart of the Nile system as the link between co-riparians.

### **11.2 Priority 1: Rural development for regaining the rainwater, food security, environmental protection, rehabilitation, and resettlement**

Sudan needs to prioritise and adopt a rehabilitation strategy prepared in line with sustainable development principles and this strategy should target the historically marginalised ecological zones with the aim of enhancing/regaining their “green water” through supplemental irrigation. This strategy should essentially involve the non-Nilotic rivers and streams. The ultimate goal of rural development through supplemental irrigation is to overcome the causes of population concen-

tration, namely food insecurity and consequent conflicts. In this respect, Sudan needs to critically revise its previous policies with regard to food production and access to productive resources. The words of Gordon and Folke (1999:38) apply to such a situation: ‘Whatever the solutions will be to the need of increasing *food production in some areas*, there is a need to avoid the previous sectoral management which has led to unintentional and sometimes surprising welfare losses’ (italics added). The sectors in the Sudan that are mismanaged so aggressively are the traditional and mechanised farming sectors – the sectors totally dependent on “green water”.

The environmental scarcity which the Sudan suffers today implies a new thinking that accommodates all sectors, including the irrigated sector in the plan with the central question of how to sustain the water partition among them. The time has come to pay due attention to efficient “green water” use in rural economies rather than devoting all consideration and all funds for the development of “blue water”. This is not only to avoid the unintentional environmental repercussions often caused by large hydraulic constructions, particularly their disturbance to the water partition, but also because sustainable rural development decreases or balances the existing demand for “blue water”, that otherwise would increase due to population concentration along the RZ. In this regard, the need to adopt strategies for increasing crop output in the rural rainfed sector is urgent and unavoidable. Such strategies should conceive of the equitable sustenance of rainfed farms of rural communities as one way to mitigate potential conflicts that might take place along the river banks and therefore implies giving traditional rainfed farmers attention equal to that given to the modern sector.

The main strategy we suggest here is one of enhancing grain production and reforestation in the NRZ drylands through supplemental irrigation with the active participation of the local communities in both the definition-making and decision-making for developing their localities (detailed in section 11.3). Development, in this sense, should become integrated; should be seen as both equitable *national* economic development for keeping the balance of population distribution between the RZ and NRZ and the human development necessary for environmental awareness and, therefore, environmental protection and resource management at the local level. Downstream RZ beneficiaries, namely influential groups and cities should reciprocate to local watersheds in the NRZ (and for that matter the upstream RZ) what sustains them, what establishes a “hydro-solidarity” between them and capacitates them to produce more efficient “virtual water”. ‘To protect its water sources, the city needs a proactive approach based on a Prevention Pays Off Principle, PPO. It has to see the catchment of its water sources as an asset for development, which raises the issue of downstream compensation of upstream costs’ (SIWI 1999:2-3). Seats of power, in so doing, should espouse a new vision – one of regaining the rains in both drylands and wetlands of the upstream RZ and NRZ. This vision should be critical towards prevailing notions that resources in the Sudan’s NRZ and upstream RZ are limitless – notions established by the fron-

tier-cast ideology, which disguised not only the abuse of resources but also the real population who benefited from these resources. There is a need to pay especially close attention to these resources with the goal of regaining the rains in mind. Already a good database on precipitation is available and possibly on how much of it is lost annually. No attempt, however, so far has been made to regain the “lost” rains. A detailed account of the areas where rains fall is necessary for determining the way to regain the rainwater.

Five types of areas can be broadly identified in the Sudan as a necessary step for regaining the rains and ultimately for generating structurally induced relative water abundance (SIRWA). These include, firstly, the desert and semi-desert ecosystems (drylands with short-term rainfall or short-term seasonal runoff, such as in northern Sudan, which are good for browsing animals, though damaged by shifting agriculture). These types are expansive areas and the three other types to follow partly overlap with them. The second are fertile lands with relatively adequate seasonal rainfall, however, lacking storage capacity to keep rainwater for dry season use or with too deep a water table, salty water or no underground water for use by people and animals in the dry season (these are known in Northern Kordofan as *nageib* areas) with the result that some good soil and pasture resources in these areas are “wasted”. Third are areas with abundant underground water and easily accessible water table (sometimes 3–4 metres deep, as in the *Kheiran* area), with fertile clay soils, however, with erratic rainfall, leading to crop failure. Fourth are areas with abundant underground water and easily accessible water table and fertile soils, though not conducive for overflow irrigation (oases along valleys in the desert). The final category, different from the above ones for abundance of its rainfall, is that of the submerged wetlands or lands with a large biodiversity component but threatened by floods, such as swamps in southern Sudan.

Negligence of these areas causes loss of “green water” due both to evaporation and to the economically non-utilisability of underground water. At the same time, this negligence causes increased demand for “blue water”. To keep populations of the NRZ and upstream RZ productive using “green water” and, therefore, dissuading them from migrating and further stressing the downstream RZ, there is need to “compensate” them for the loss of their resources, which occurred primarily as a result of authoritarian development policies and unequal terms of exchange of their “virtual water”. Compensation for these groups should help them produce “virtual water”, which is to view their upstream RZ and NRZ areas as assets for development. How can this be attained? Below we shall consider ways of regaining water in the first four dryland watersheds, the last watershed type is left for the section addressing the increasing of “blue water” supply (priority 3).

The dryland ecosystems were historically the habitat of a sizeable population both human and their herds. The best way of “harvesting” rains in the desert and turning them into “virtual water” is by herding browsing animals, especially camels. Interestingly, live camels have been frequently exported from the deserts of the Sudan to Egypt, now for several centuries. This desert (NRZ) “virtual water”

is in high demand and contributes to the diet of population farther downstream. Virtual water in the form of camels is marketed along the Egyptian RZ from Aswan to Embaba in Cairo. While this generates income for large rural communities, it provides “virtual water” to Egypt. As mentioned in Chapter 7, the pastoral sector, mainly the nomadic, is among the most endangered, though without it desert resources will be lost totally. In our view, this sector can be supported by rehabilitating parts of the desert, especially by reintroducing some of the shrubs and trees lost in the hard years, mainly dried and fallen or burned for charcoal; restocking the herds in some areas; and encouraging and facilitating the marketing of camels. Referring to the case of Western Pokot in Kenya and Uganda, Ton Dietz (1993:94), who is critical of the thesis of the “collapse of pastoralism”, sees ‘pastoralism could easily support the existing population of the area’. There is need, however, for some government intervention or assistance, as Dietz may suggest, for sustaining this support. Governments, in his view, ‘could assist by guaranteeing that markets function, by setting a bottom price for animals during droughts, by providing some kind of insurance in case of climatic epidemics, and by securing the availability of grains or meal when private markets fail to do so’ (Dietz 1993:94). Such measures to be applied in the desert and semi-desert ecological zones in the Sudan would not only secure the livelihood of rural communities, but may also reduce pressure on the environment. The best way of delivering such assistance is by facilitating supplemental irrigation, namely through providing the necessary systems or equipment.

The second type of niche (i.e. fertile lands with relatively good seasonal rainfall, however lacking water during the dry season and with no accessible underground waters) represented by *Nageib* is particularly important in the sense that it can relieve neighbouring areas from pressure. These lands therefore need an adequate supply of water through tankers or pipelines for human and animal use.

The third type (i.e. fertile clay soils and relatively easily accessible underground water) is exemplified by part of the *Kheiran* area in Bara District in Northern Kordofan State. This niche needs “blue water” to supplement its “green water”, especially to benefiting from the traditional (overflow) irrigation systems used in some parts of the *Kheiran* area. Appreciating the numerous traditional water harvesting techniques useful for small-scale irrigation, Gordon and Folke (1999:37-8) suggest ‘managing soil nutrients and water in an integrated way where small-scale supplementary irrigation can be added when the plants are in drought sensitive stages of their developments’.

The fourth type of niche is that of areas with erratic rainfall and abundant underground water, but not conducive to overflow irrigation. This actually applies to the larger part of the *Kheiran* area (mentioned above), where there are expansive productive sandy drylands that can benefit from these underground waters. The best methods that can be provided for the inhabitants of these niches to optimise use of rainwater, which could be lost to evaporation, are shower, sprinkler, and root irrigation methods. Parts of these areas, however, could be more produc-

tive if they were turned to exclusive meadows, with rainfall on them supplemented with sprinkler irrigation.

Noteworthy here is that supplementary irrigation is already being implemented in some Nile riparians. In Kenya's semi-arid district of Machakos, in order to bridge a serious dry spell, residents use supplemental irrigation to help rainfed maize survive (SIWI 1999:13).

The above alternatives should essentially follow the goal of caring about ecosystem services and simultaneously enhancing economic productivity therein. They can be complementary in areas such as in North Kordofan – they can rehabilitate the symbiotic relationship between localised herding and farming economies and solve the food shortage. In this respect, what should be considered is to mitigate the impacts such as flash floods (Chapter 4) caused by dry season spill over by reinstalling the ecosystem original species as well as increasing the economic productivity of these species. For instance, the gum arabic belt, which in the nineteenth century produced the most lucrative export goods (Chapter 3), is one such area that can be considered for applying supplemental irrigation. This belt should be rehabilitated to regain the rain and as well to enhance the incomes of local communities. Studies on the Nile should, therefore, move to identify in greater detail the core areas and which irrigation methods to be used, which species need to be replanted for regaining the rains and simultaneously rehabilitating the local ecosystems. In many local catchments in the Sudan, alien species have invaded, damaged soils, sucked underground water and converted, unproductively, “green water” to air. This calls for reinstalling the original species, where local communities may work through compensation or offering them other incentives. Compensation could be viewed in relation to three forms of ecological and economic services. These include, firstly, compensation for curbing the crawl of the desert; secondly, for increasing gum arabic exports; and lastly, for producing food for urban NRZ areas and “virtual water” for the RZ. South Africa has interesting examples of how water can be procured by re-installing the original components of an ecosystem and herewith empowering local communities by helping them to increase their incomes. As part of the so-called “Working For Water” programme, according to Gordon and Folke (1999:38), ‘catchments today are cleared of aliens in order to secure freshwater to the cities as well as other ecosystem services’. External development devices and associated wealth accumulation values should be re-evaluated in connection to the sustainability of the localised ecosystems. Studies should quantify the gains from “green water” versus those from “blue water” in relation to different productive sectors and necessarily for mitigating problems of local ecosystems (NRZ and upstream RZ) and those that may occur on the banks of the river in the downstream RZ. ‘The crucial question here is to what degree the green water flow will have to increase to intensify food production in the poverty stricken dry climate countries which are those with most rapid population growth: the reason is that a green water increase is equivalent to a blue water decrease’ (Falkenmark 1999:23).

Policies to be adopted in relation to rehabilitating the dryland NRZ niches should consider how to slow the water rushing downstream. Such policies are of significance for decreasing soil erosion in the upstream and simultaneously for curbing floods in the downstream but most importantly, if applied on large-scale, they may help increase water retention and, therefore, humidity and cloud formation. 'Upgrading rainfed agriculture will call for improving both the infiltrability and water holding capacity of the soils, and the water uptake capacity of the roots by protection from dry spell-related plant damage' (Falkenmark 1999:22-3). Rural communities can contribute constructively to this process even when they are serving their anthropogenic interests; the question, therefore, is how to make the right mix. In the case of arid zones, such as in northern Sudan, a mix of acacia trees and millet plantations, among other indigenous species, and browsing animals taken care of through supplemental irrigation and adequate rural water supply could be the best response for degraded dryland niches. In the NRZ of the western Sudan drylands, for instance, the two most important indigenous species that need to be taken care of through supplemental irrigation are *acacia senegal* trees and millet plants.

The *acacia senegal* trees should be taken for its soil-improving and stabilising qualities, which make it crucial for fighting encroaching desert and preventing the desertification that threatens the whole area. Acacia trees are considered efficient in capturing rainfall and directing it to water vapour flows (Gordon and Folke 1999:36), therefore help decrease flash floods and increase humidity and cloud formation. Millet, which was partly abandoned in the western NRZ (Chapter 4), should be reintroduced, as it is good for the ecosystem – it has a bushy stem, in fact a number of stems making a thick cluster in the way of water flow, unlike sorghum stems which are thin and cannot block or hold water for long. Additionally, millet is more nutritious than sorghum for a region that is haunted for quite some time now with food insecurity.

As noted above, development of such niches in a sustainable manner – guided by hydro-solidarity principles – decreases pressure on the downstream RZ. Attention should be paid to how much rainfall needs to be captured by terrestrial ecosystems to secure ecosystem services and how much water should be left in the river to securing key ecosystem services there, why should this be done, when and how to do it (Gordon and Folke 1999:38). Similarly, determination is needed of how much underground water should be extracted. Which niches need efficient "green water" conversion and, therefore, introduction of plants and trees for that purpose and which niches are good for producing "blue water"? The ministry of irrigation should break with its "blue water" supply prioritisation/"cotton ideology" and spend some money procuring and regaining "green water".

Equitable local and regional economic development should also assure the balance of population upstream RZ and downstream RZ and lessen any appreciable harm to downstream RZ that may be caused by cutting water to satisfy the rapidly concentrating population in the upstream RZ or by pollution happening therein.

Seeing water in these interrelationships provides the clarity that is crucial to preserve the integrity of the ecosystem as well as to understand the dynamics it is undergoing. It is a shield protecting the RZ from being overburdened by more demand and protecting the downstream from harm from avoidable upstream pressures due to the social effects of environmental scarcity. This applies to the international level, too. Pursuing its goals of receiving adequate water supply, the Sudan should encourage and contribute to applying the same or similar rehabilitation measures noted above or ones similar to its upstream neighbour, Ethiopia. Such measures are significant for reducing soil erosion in Ethiopia and simultaneously for curbing floods and silt accumulation in the Sudan – the two problems from which the country has suffered a great deal.

### **11.3 Priority 2: Political stability and communal participation in managing natural resources**

We are now certain of the negative impact of political instability, especially associated with civil war, in inducing water demand scarcity. Civil war in line with the above discussion causes the loss of rains by depopulating affected regions. Moreover, it hinders any attempt at benefiting from the “blue water” of the swamps region.

Political stability in the rain-belt regions, therefore, is necessary condition – it is necessary for increasing the “blue water” supply from the swamps and regaining the rain, which in turn is necessary for carrying out the intended economic development projects. The social effects of environmental scarcity seem to hamper political stability and threaten unprecedented dangers. Our discussion in Chapter 4 and Chapter 6, illustrates that the ecologically-marginalised rural communities from the NRZ and upstream RZ can equally contribute to environmental degradation and generate the causes of their mass migration and displacement to and, therefore overwhelming, the downstream RZ. Involvement of these communities in developing their localities is crucial to mitigate the syndromes of their plight. Referring to the effect of droughts on different classes of peasants and the combination of factors that leads to famine, Wolde Mariam (1991:219) notes, ‘political disadvantage undoubtedly forms the link between drought and famine for the peasantry’. Local capabilities must be duly recognised and involved in visions at various levels, as the user level should be the abode of some of the most vital management options and decisions (Lundqvist 1999:62). Associated with the values of participation and democratisation, are consideration for the multi-faceted role of women in water-related issues and interlinkages between poverty, lack of clean water and basic sanitation services, and social problems, and hence, the need for radically new and innovative ways for addressing the water crisis (SIWI 2001).

Involvement of local communities as civil society organisations provides an alternative think tank for conflict resolution and for dialoguing over issues of concern which decreases the incidence of violence over water and land use. Besides the

need for diagnosing issues and building trust among parties involved, conflict resolution, according to Vlachos (1999:74), ‘involves consensus building and depolarizing of conflicting interests through public finding processes and adjudication’. Public participation and negotiations are not only meant for political incorporation of diverse interests; rather they become ‘tools in maximizing agreement’. Citizen participation or public involvement, in Vlachos’ view, ‘have become not only the noble cries of an environmentally conscious society, but also the presumed imaginative tools for creative planning and for the achievement of a broad consensus for desired action’. Citizens’ participation can occur at different levels and take different forms, including water/land parliaments. There is a dire need to involve communities in the NRZ and upstream RZ in the processes of definition-making and decision-making with regard to developing resources. This implies respect for these communities’ existing traditional institutions of managing these resources and encouraging them to create water/land parliaments. This is only logical as a positive response to these communities’ rising concern for owning and managing their own resources, as an essential condition for political stability, which is in itself crucial for benefiting from the rains on these communities homelands.

Recently, public opinion in the Sudan is being more effectively engaged in “wealth sharing” debates enforced by armed movements in southern Sudan and recently in Darfur, including water resource, at least for the currently armed movements fighting the central government (for details see El Zain 2006e). This involvement has several merits with regard to water resources management, especially if it will consciously go beyond the upstream/downstream divide to involve the RZ and NRZ dimensions. Lundqvist (1999:62) notes ‘The landscape with its particular upstream/downstream dynamics and with its various actors, constitutes the interface where policy and (mis-)use of water and land confront each other. To make a difference from a mirage, a vision must be encompassed by the “doers”’. In his view, this implies involvement of a whole range of water issues decision-makers, from the highest policy-making level down to the level at which day-to-day decisions are made, implying some degree of coordination with presumably transparent rules and regulations endorsed by the various stakeholders. According to Lundqvist (1999:62), this approach is crucial, for otherwise, water problems are more likely to increase rather than decrease; the task being to abide by what was declared by the World Water Vision to make water “everybody’s business”. ‘Making “water everybody’s business” implies various things. It explicitly widens the view on who should be actively engaged in efforts related to water management. The notion transcends conventional interpretations of central concepts such as suppliers [and] beneficiaries’ (Lundqvist 1999:62).

Like other resources in the Sudan, water has *not* been everybody’s business. It has always remained, in the final analysis, under the centralised command of the state, which owns 99 per cent of the area of the country (Chapter 3). ‘When environmental governance is not [up to] the mark, the civil society acquires a very

important role in fighting for appropriate change in governing systems' (Agarwal 1999:125). An innovative idea manifest in the creation of "river parliaments" is probably the most effective institution allowing for participation and involvement of civil society organisations.

The idea of "river parliaments" is currently being discussed in India, consisting of upstream and downstream civil society institutions with the aim of coordinating and bringing upstream and downstream users together to understand their respective problems and jointly pressure the state to improve river-basin management within a participatory framework (Agarwal 1999:126). Such institutions do not exist in the Sudan; at least not known to be actively involved. However, besides the need to understand the ecohydrological processes operating in the landscape we also need, according to Gordon and Folke (1999:38), to enhance understanding of human organisation in relation to natural resources. In their view, removal of institutional barriers is crucial for improving the freshwater allocation between human activities and the life-support system. They draw attention to several interesting nested institutional arrangements of irrigation systems that exist in catchment areas, including sophisticated watershed-ecosystem-based management inherited from ancient societies. Appreciation of institutional arrangements at the local watershed level is gaining importance. 'A new paradigm of governance and social mobilization is slowly emerging with the government as facilitator and law maker and consumers as part of the governance process' (SIWI 1999:3). The authoritarian development paradigm prevailing in the Sudan is certainly an obstacle to the carrying out of a sustainability package, and the current environmental situation renders this paradigm obsolete. In fact, good management of water resources implies a democratic setting and necessitates a process of democratisation. Essential to this process is the recognition to rights of people to their resources. This implies a land reform to correct the odd situation of split tenure systems, which governments inherited from the colonial administration and which gave rights of ownership of land to riverain farming communities and deprived the larger majority of the Sudanese from such a right.

A shift from a preoccupation with perceptions of national security to one based on environmental and regional security; however, with localised watersheds being its units of analysis is a necessary move for creating basin-wide political stability both in the RZ and NRZ. This is essentially found in the move to question the state-centric water concerns and their territorialised "hydro-sovereignty" implications and putting the principles of "hydro-solidarity" centre stage, implying recognition of localities' right to manage and benefit from their own resources and to receive compensation from the powerful cities downstream. Equity associated with the latter implies dynamic proactive arrangements that perpetually transcend the established rules compatible with claims of hydro-sovereignty conceived in the region of foreign relations. Political stability necessitates considering the causal effects associated with conflict in the Nile Basin as qualita-

tively different outcomes to causal mechanisms, which need to be comprehended better by looking at the dynamics of local ecosystems. Conflict over resources in the Sudan takes the form of ethnic and religious discourses, which represent the real threat to national security.

In achieving political stability, the Sudan will not only pursue augmenting its water supply adequately for itself, but also for other riparians. While political stability is necessary for all the Nile riparians, it is the Sudan's stability that is of most immediate impact on increasing the water supply. In the late 1970s, renowned scholar John Waterbury (1979:209) observed, 'As far as the Nile is concerned, Egypt's stability is relatively meaningless while the Sudan's instability is of incalculable importance for it is the mid- and not the downstream state.' Over two decades later, Ashok Swain (2002:305) asserted that 'as long as the civil war continues in Sudan, any collaboration between the riparians in the Great Lakes region and those in the lower basin will be extremely difficult'. Yet the Sudan is the only remaining riparian that maintains a long and wide-scale intensive civil war, while the other riparians have achieved relative political stability, at least in some intervals, enough to restore some destroyed environmental amenities. Stark polarisation, accelerating political instability and the split of the Sudan into two states would have serious future repercussions on the Nile hydropolitics. A split in the Sudan may establish a new polarisation along the upstream-downstream spectrum, which might jeopardise the ongoing NBI process. In this regard, the Sudan, more than Ethiopia or elsewhere, represents the environment that induces conflict *par excellence*.

Recently, as one way to overcome problems of political instability, the Sudan sought a legalised process for its two parts (i.e. south and north Sudan) to separate or stay as a united state. The disintegration of the Sudan into two states may render empty the previous policies designed to increase the water supply for northern Sudan and Egypt, as we shall see later. Political stability in the united Sudan is necessary for two reasons. Firstly, it keeps millions of people in their productive upstream RZ niches, benefiting from "green water" instead of stressing the downstream RZ – increasing withdrawals of and polluting the "blue water". Secondly, it represents a precondition for resuming water-augmenting policies, namely, what we suggest here as the partial draining of the swamp, and provides guarantees for its sustainability. This, through the Jonglei I and Jonglei II project phases and developing other swamps areas, could add more than 27 billion m<sup>3</sup> to current water supply.

The continued unity of the Sudan is interestingly viewed as important by its two neighbours. The two riparians sandwiching the Sudan oppose the split of this country into two sovereign units. Egypt may aspire to drain the waters of southern Sudan, which are attainable only under a united Sudan, with which it has signed deals. Ethiopia is concerned more about regional security and, therefore, endorses what would 'enhance [Sudan's] unity, and not division' (*Sudan Tribune*

16 August 2004). However, should either destabilise the Sudan, the basin-wide modalities would become more complicated.

The above directly links to priority 1. Thus, rural development for resettlement should encompass the spirit of sustainability. It implies rethinking the relationship between farmers/peasants and the state by seeking participation in a bottom-up approach (see Jemma 1997:173). In this sense it serves as a tool for enhancing the environmentally constructive role of the human being.

Beyond the measures discussed above, which are, primarily, “intra-basin” ones, there is a need in the long run to pursue grand strategies such as “inter-basin” water transfer or what is referred to as the “regional alternative”, linking the Nile to the Congo River. This inter-basin regional alternative will materialise only if sustained political stability is achieved in southern Sudan and the neighbouring north-eastern region of DRC. Where conventional alternatives (increasing the riparians’ shares of international river waters and non-renewable groundwater) as well as non-conventional alternatives (such as desalination) are failing, the resort to a “regional alternative” based on terminating the surplus water from neighbouring geography becomes important, particularly on the African continent (Majzoub 1998:274-5). The Congo River, in this respect, is considered to provide for the “regional alternative” by terminating part of its surplus into the Nile’s south-western tributary of Bahr Al-Arab inside the Sudan. Implied by the need for water in the Middle East, the “regional alternative” opens wider scopes for cooperation for meeting increasing needs in the Nile Basin and the Middle East and could be made politically feasible.<sup>1</sup> Yet there is also the risk of sabotage. Whose hand would be on the tap? Unlike in Ethiopia, it would be possible to block the flow of river water augmented from the Congo and it could prove disastrous if countries downstream would become highly dependent on it. The optimism of economic feasibility thus may overlook unfeasibility from a security or political perspective.

### **11.4 Priority 3: Increasing water supply for agricultural development and food security**

Although the authoritarian pursuit of increasing “blue water” supply, whether to serve the northern Sudanese agricultural lobby or Egyptian interests, has been central to Sudan’s instability there is still a need to augment this “blue water” supply. However, this should be through a strategy that should pay greater attention to not marginalise the local communities, not to antagonise Egypt, and not to deprive Ethiopia.

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1. According to Majzoub (1998:258) since the mid-1990s, deep changes have appeared in political, economic and military relations in the world, especially in the African continent. The peace process between some Arab countries and Israel started to draw attention to the possibilities of the Arab-African cooperation.

The Sudan may pursue augmentation of its water supply through three options, namely through channelling the waters of the swamps, decreasing evaporation, and inter-basin transfer. All are, in fact, crucial for the three major riparian states to receive enough water and to achieve a degree of cooperation among them. In fact, the three options show the pivotal position of the Sudan and the potential role it may play in reshaping relations among co-riparian states.

Increasing water supply from swamps in southern Sudan and other areas in the upstream in the Nile Basin should be primarily led by the spirit of caring for the urgent requirements of those who need water, not for accumulating power for those already powerful. What we suggest here, in this respect, is that augmenting water supply should be first and foremost for the benefit of southern Sudan and then cater for demand in the three major contestants. In southern Sudan, the goal must be to generate social resource abundance with a view to decreasing use of "blue water" in the long run so as to leave part of it for the service of the ecosystem. In connection with this, now we shall return to the fifth niche, the submerged areas in southern Sudan.

In our view, the development of the river in the swamp region of southern Sudan, necessarily should be in a sustainable manner, is urgent and should be carried out. This is precisely because southern Sudan was recently hit by and has undergone the impact of droughts (for details see Mageed 1994) and, additionally, because the swamps are not always friendly to communities in their surroundings, let alone those who live within them. A regime of control is necessary and that should not necessarily lead to destruction of the local watersheds. While considering compensation from the international community for preserving the diverse species therein, swamp development or *drainage* of wetlands should give way to a new philosophy founded on hydro-solidarity. To espouse this philosophy, there is need, according to Gordon and Folke (1999:37), 'to understand human dependence on these systems for essential ecosystem services. There is also a need to address and understand how effects might cascade through the catchment, causing severe impacts.' In our view, several alternatives of augmenting water supply are blinded by the cult of procuring large supplies of water and the engineering "truths" associated with them. One such alternative is to dig several canals, instead of a single gigantic one such as the Jonglei Canal, with the aim of giving biodiversity preservation a consideration equal to that given to procuring the waters. This should be seen in a minimum loss of "green water" for augmenting the supply of "blue water". Alternatives could also be sought for the size of the area to be drained. Instead of draining a large segment of the swamps there is a possibility to divide it into hundreds, even thousands of niches with the aim of preserving the integrity of the ecosystem as a whole. The idea is to specify several niches for development and leave many others for the different species. The niches designated for development would be turned into a grid of small channels across the swamps area instead of one large channel with large ones draining into it, as manifest in the Jonglei project plan. Channels can be designed to cater

for floods, as well to cater for soil moisture in the region. In some areas there is no need to drain the water as it is possible to cultivate different types of food alternatives (e.g. rice and fish) so humans benefit as well as other species.

The northern Sudanese agricultural lobby and Egypt, which, through authoritarian development policies wanted to channel the swamp waters for irrigation downstream, would certainly appear as losers and would try to influence any decision concerning the “alternative” channelling of the swamp waters. Economists are also ready to argue against such an alternative due to the huge amounts of money it would entail. Calculations, however, should consider the social and ecological costs, not the economic cost alone. The suggested grid of channels is a necessary shield against inducing large-scale population concentration caused by the disturbance unsustainable drainage may cause. An important gain from such channelling is that it might lessen tribal clashes in as far as it is distributional in association with which areas are to be drained and which should be preserved in localised watersheds. Identifying which areas are to be developed and which are to be left necessitates the involvement of local communities that are directly affected, which may come up with constructive proposals. What is striking is that the conflict between water bureaucrats and ecologists, regardless of the good or bad associated with it, has largely marginalised local communities.

The way to increase water supply in the short run would be the resumption of the first phase of the Jonglei Canal and to do the necessary preparations for the second phase. In this regard, whereas no increase in water supply can be sought from the source in Ethiopia in the short or medium terms (Shapland 1997:91), it is the stability of the Sudan that represents the most significant guarantee for any future increase of water supply. Stability in southern Sudan, as noted earlier, is crucial for the second phase of the Jonglei Canal, which should, in the long run, cater for the demands of all riparians. In this respect, stability of the Sudan contributes to resolving tensions between Egypt and Ethiopia in so far as huge amounts of water will be reclaimed from swamps and will pass through Sudan’s territory. Tafesse (2001:103), along with Kliot, points out that the reclamation of swamps that exist inside the Nile Basin could yield 27.41 billion m<sup>3</sup>, 18.23 billion m<sup>3</sup> from the *Sudd* and Bahr el-Ghazal, 4.14 billion m<sup>3</sup> from the Machar Marshes on the Ethio-Sudanese border and 5.04 billion m<sup>3</sup> from the Kyoga swamps in the Equatorial Lakes. The first is totally inside the Sudan, the second largely falls in the Sudan and the water of that last will be procured only if the first phase of the Jonglei Canal (totally inside the Sudan) is completed (see also Naff and Matson 1984:139, see also Shapland 1997:92).

Increasing water supply at this stage is more a political undertaking than an economic or technical one. Basically, this entails continuing with the previous policies, but with a new development imagination that caters for the needs of all riparians and, most significantly, for the needs of the communities that river development will affect (see Elhance 1999). Paying due attention to local watershed marginalisation, swamp development should first be dealt with at the local level,

then as part of national water policy, which can then be integrated into policy at the sub-basin level. Northern Sudan can no longer afford to continue to antagonise its other half, i.e. southern Sudan, in order to ensure the security of Egypt. Therefore, the development of the swamps waters should be guided by involvement of and through localised and national “river parliaments”. Tafesse (2001:103) notes that the realisation of the swamps projects needs ‘basin-wide cooperation, finance, environmental scrutiny and, above all, the conviction and consent of the local population that inhabit the area and do eke a living from it’. The Sudan has the highest bargaining mix and it could go as far as using all the waters originating in its territory without sharing a drop with Egypt.

Development of swamps, however, has been a thorny issue. Conflict over the Jonglei, for instance, is feverish between the water bureaucrats and the ecologists. The former blindly pursue grand strategies for solving water scarcity problems by increasing water supply and the latter are adamant to defend the integrity of the ecosystem. While in the Sudan this has not yet manifested in effective activism, internationally it has raised concern. However, while water bureaucrats insist that draining of waters is necessary for the development of national economies, those expressing ecological concerns suggest a means of compensation that the international community pay for the preservation of the ecological diversity of the Sudd Region.

The second option for increasing water supply is through the shift of storage facilities from the zones of high evaporation rates to those with less or low evaporation rates. Precisely in connection with Ethiopia, the Sudan plays a significant role in encouraging the former to develop its part of the Nile, including dam construction. Sudan may encourage this for its own public interest (Chapter 9). Swain (2002:305) stresses the importance of this shift given that conflict in the Sudan prohibits any augmentation of water supply from the White Nile. Swain, in fact, sees the only alternative as considering storing water in the Ethiopian highlands, which can provide storage facilities better than the ones at Lake Nasser. Leaning on estimates by J.A. Alan, he notes that ‘after taking into account the evaporation and seepage at Lake Nasser, the Ethiopian storage facilities could increase water availability for Egypt by as much as fifteen billion cubic meters per year’ (Swain 2002:305-6, see also Tafesse 2001, Kliot 1994). In other words, ‘Sudan and Egypt would not have less water available to them’ (Whittington and McClelland 1992:150) and yet Sudan would gain great benefits, namely to overcome the annual headaches of silt accumulation and floods. Storage in the Ethiopian highlands, in fact, is considered to provide ‘the greatest opportunity over the long term for dramatic improvements in the overall management of Nile resources’ (Whittington and McClelland 1992:152). Unlike developing the swamps, which might cause great damage to localised ecosystems, storage in the Ethiopian highlands, in fact, would enhance the functioning of the ecosystems on a larger regional scale. By building dams in Ethiopia and the Sudan, according to Swain (2002:306), ‘significant hydropower potential could be tapped, enabling

these two countries to efficiently use the underground water as an alternative source of supply'. Upstream dams, he notes, 'could also help prevent silts from entering Lake Nasser. International support should be targeted to promote and leverage these advantages and help build trust among Ethiopia, Sudan, and Egypt, encouraging them to enter into a mutually dependent cooperative framework' (Swain 2002:306). In this respect, consideration of such a shift should receive due attention even if water supply augmentation from the White Nile proves effective. That last is likely to be consumed in the far future. Long-run supply augmentation actually responds to hydro-solidarity appeals – decreasing evaporation in the desert and making sense in the humid regions. Sudan should be particularly interested in pushing for this alternative for it would help to stabilise Ethiopia and overcome what may jeopardise the water flow to Egypt.

The third option, i.e. the inter-basin water supply known as the "regional alternative" project, is conceived through connecting the Nile to the Congo River. If implemented, this project would provide 50 billion m<sup>3</sup> of water, which would not only meet all near future demand in the Sudan, but also, as Majzoub (1998:277) point out, resolve the water deficit in the Middle East and fill groundwater reservoirs with renewable water. Terminating the surplus of water could be through constructing channels that raise the water level of the tributaries of the Congo, such as the Oubangui and the M'bomou, so that the water reaches southern Sudan and from there to the western desert in Egypt and the south of Libya (Majzoub 1998: 275-7). If an alternative plan parallel to the Nile across western Sudan is adopted, the channelled water would bring about major ecological and economic changes in the areas it flows through. If that were the case, the NRZ region of Kordofan, in particular, would largely recover and, therefore, reduce its massive population migration to the downstream RZ if not reverse it. The project would also resolve the problems of electric power (detailed later).

The project of Congo-Nile inter-basin transfer is financially and topographically feasible since its cost would entail digging a canal not exceeding 50 kilometres in length<sup>2</sup> and lifting up the waters of the Congo tributaries that adjoin the Bahr Al-Arab in south-western Sudan (Majzoub 1998:280). The implementation of the "regional alternative", according to Majzoub (1998:280-1), would eliminate the causes of tension between the Nile countries and provide water to meet the needs of the region in the future. The cost of the project is far less than the cost of a single war to be fought over water in the Middle East. The project is feasible for a large number of beneficiaries. The Middle Eastern countries have the capital and technology. What is needed is an integrated approach and partnership. According to Majzoub (1998:281), it would not be difficult for countries of the Arab Peninsula to finance and benefit from this project, which could provide them with water to be carried by pipes to the coastal cities of the Red Sea and the

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2. According to Majzoub (1998:277) the sources of the White Nile at Bahr Al-Arab nearly touch those of the Oubangui and its tributary of the M'bomou.

Gulf. According to Majzoub (1998:281), the task, however, remains to accrue the assured desire for cooperation among African and Arab states, mutual trust between peoples and rulers, and determination to benefit from the electric power and realise the development ambitions of the Congo riparians. Essential to this cross-continental mutual trust is to avoid the mistakes already committed in the Sudan, resulting from the involvement of the World Bank and Arab investment money (Chapter 5) in the capturing and environmental destruction of expansive lands, rendering their ancestral owners landless and, ultimately, pushing them to engage in bloody civil wars (Chapter 4). We understand as essential to the cross-continental mutual trust to instigate a depoliticised approach from the side of the Arab investors to investment in the Sudan; to avoid supporting cruel downstream RZ-seated dictatorial minority regimes; and to respect the rights of ethnic minorities to their resources.

The Nile-Congo inter-basin water transfer option may be especially interesting for the Sudan because of the latter's insatiable demand for water. Sudan may need nine times the current flow of the Nile to be able to water its irrigable lands of 85 million hectares (Chapter 9). While efficient water use and management remain key, the strategic solution for Sudan's water shortage and guarantee for good neighbourliness with Egypt and Ethiopia remains inter-basin transfer. Sudan, having an insatiable demand for irrigation water, may not, in the longer run, be satisfied with waters to be developed in the upstream of the Nile. Among all riparians, it might be the most interested in the proposed inter-basin water transfer. In fact, this inter-basin water transfer appears to be the only solution to what has been described as the inevitable and hardly irreconcilable structural conflict between the Sudan and Egypt (Chapter 9).

Thus, of the 50 billion m<sup>3</sup> possible augmentation through inter-basin transfer, Sudan may benefit from 45 billion m<sup>3</sup> and leave the rest to go downstream to Egypt. Such a project may help southern and northern Sudan to continue united, as it would provide enough water for the resource-hungry northern Sudanese and transform the violent approach to their accessing resources in the south. Moreover, it may reduce Egypt's vulnerability and help it to pursue a constructive policy towards the Sudan. It might generate for the Egyptians hundreds of thousands of jobs inside Egypt and in northern Sudan's arid RZ. In this respect, the Sudan may go it alone financially should its oil revenues significantly increase, as it stands as the greatest beneficiary. Sudan's agricultural lobby, undergoing the pressures resulting from scarcity of irrigation water and the possible redeployment of its investment monies from lands "liberated" by their historical inhabitants (Chapter 4) may seek water supply from the Congo, especially if it attracts international companies involved in water construction and irrigation systems. Adding to this is the practical need for food in expansive regions, where Sudan has the land resources that neither of its co-riparians have, qualifying it to become the greatest of beneficiaries from the Congo waters.

There are, however, risks associated with water constructions to link the Nile with the Congo River in one of the most volatile regions in the world. Like the Jonglei project machinery could become an easy target for rebels in a region haunted with injustice and corrupt regimes. There is also the risk of transferring water species indigenous to the water-abundant Congo River Basin to the Nile Basin, which may have negative impact on the latter's indigenous species. However, water supply augmentation-wise, any venture in this respect even for a shorter period may be useful for water users in the Nile downstream. Transferring water from the Congo could in the short term contribute to replenish the underground aquifers depleted so far.

### 11.5 Priority 4: Trading “virtual water” for mutual dependency among Nile riparians

For maintaining its own political stability and pursuing the goal of increasing its water supply, Sudan should play a greater role in enhancing a regime of effective exchange of “virtual water” between the RZ and the NRZ. This “virtual water” exchange should involve clearly defined preferential trade terms between the RZ and NRZ in the Sudan and between the Sudan and, at least its immediate co-riparians within a framework of a community of interests and hydro-solidarity. This, in our understanding, represents one important way for regions in the Sudan and riparian states to go about addressing their water-scarcity problems. The “virtual water” exchanges among Nile riparians could be thought of in a more innovative way. The length of the Nile, which under *territorialised* “hydro-sovereignty” regime has been a source of problems in the past, can be made to generate the opposite now, by espousing hydro-solidarity ethics. Different ecological, climate, and topographical zones in the Nile Basin means that its countries have different seasons, which could be a great asset to overcome food insecurity resulting from seasonal food shortages and seasonal hikes in cereal prices in any of them (see Markakis 1998:99). These seasonal food shortages and the resultant seasonal price hikes represent a cause of immense misery for rural communities in the Nile riparians. The variation in ecology, climate, and topography also means different products, which, therefore, can be exchanged among them in a preferential cooperative framework. Ethiopia, for instance, faces severe soil erosion due to deforestation and this very soil erosion, among others, presses Ethiopia to go for more Nile water, decreasing it downstream. A fund for reforestation in Ethiopia with the aim of benefiting from forest products (biomass, fruits, and other products which would become part of the livelihood of rural populations as well as for export) and serving the ecosystem would, therefore, produce a double advantage. Farmers, at least for some time, would abandon some of their soil-degrading cropping. Such an arrangement necessitates discussions about what Gordon and Folke (1999:35-6) call ‘upstream-downstream *ecohydrosolidarity*’. This is precisely because ‘it is the land area in the valley bot-

toms that is worst off', while 'it is the farmers located upstream in the landscape that will have to give up their crop production to secure the ecosystem services of new designed ecosystems, and the sustained crop production downstream' (Gordon and Folke 1999:36). The creation of a Nile Reforestation Fund would sponsor and take care of the needs of farmers awaiting their forests to mature.

The downstream as well as upstream Nile riparians could import from Ethiopia the "virtual water" necessary for the rehabilitation of the latter's highlands. The Sudan, viewed as the breadbasket of Africa and the Middle East, could import "virtual water" from Ethiopia and also export "virtual water" to her. The difference, however, is how these exchanges serve the balance of the water partition – how "virtual water" from Ethiopia, in the form of products gained from forestation (use of "green water"), would help rehabilitate this country's highlands and, therefore, decrease or stabilise its demand for "blue water". What type of plantation could the Sudan and other Nile riparians benefit from in the Ethiopian highlands? Worth noting here, with regard to plantations, is Sudan's trade relation with Uganda. It is reported that the Sudan has already become 'the biggest importer of Ugandan coffee and tea on the continent, having overtaken Morocco' (*The East African* 03 May 2004). This could be considered a constructive "virtual water" exchange between these two riparians. Interestingly, this has taken place at a time when political relations are most lukewarm, including the severing of diplomatic ties. Ugandan exports to the Sudan leapt from US \$4.0 million in 1997 to over US \$5.7 million in 2002 (*Sudan Tribune* 04 November 2003) – i.e. over 40 per cent increase. Similarly the Sudan can exchange "virtual water" with Egypt through a formula of less "virtual water" per unit from the downstream and more "virtual water" per unit from the upstream. In simple terms, less water-consuming products from Egypt in exchange for more water-consuming products (rice, beef) from the Sudan; or more strictly, less "blue water" in exchange for more "green water". Currently Sudan exports beef to Egypt, receiving half of the returns from Egypt in the form of asphalt and cement (*Al-Sahafa* 03 July 2004).

Cooperative terms should be founded on a hydro-solidarity ethics; namely boosting what could efficiently sustain the economies of the upstream through use of "green water" and the economies of the downstream through "blue water". Hydro-solidarity, in this respect, is essentially shared responsibility about the sustainability of local watersheds, regions, whole basins, and whole territories of riparians and ultimately contributing to sustainability of the whole Earth. Exchange of "virtual water" should be viewed not only for its own sake but most importantly for its contribution to a conscious strategy of enhancing mutual dependence both as concept and in practice. Among others, 'awareness of mutual dependence' in the view of Stroh (2003:107) is one condition for facilitating cooperative, therefore, constructive solutions to conflict over the Nile water.

Essential to the smooth flow of "virtual water" is adequate transportation infrastructure. Should Sudan provide for this as one way of pursuing its water

supplies and food security in its border localities? To pursue its water supply augmentation strategies effectively Sudan should operate as the link between the Nile co-riparians. Sudan has a pivotal position to provide for integrating the economies of the Nile riparian states – its best strategy for not antagonising Egypt and not isolating Ethiopia.

Besides the priorities above, the Nile Basin needs to establish measures to integrate their economies and normalise relations among their populations. Shared infrastructure, for example, or sharing existing infrastructure for a more efficient delivery and service, would help the countries realise mutual dependence. Sudan can be a major contributor in this area. It neighbours six Nile co-riparians – a position that no other co-riparian has. Interestingly, a tendency to share transportation infrastructure seems already in the making. The Nile riparians are increasingly discovering mutual benefits – a step, probably, compensating for the opportunities lost for some decades now, however, with the Sudan taking centre stage. Chapter 9 noted briefly the cooperation taking place between the Sudan and Ethiopia, especially with regard to road construction. Uganda, Kenya, and Egypt are engaging with the Sudan in transportation infrastructure deals. Uganda recently requested to rent Sudan's port facilities at Port Sudan. Such deliberate interdependency is good for enhancing ever-increasing integration. Very recently, investors and the southern Sudanese interim administration began talks with Uganda exploring avenues to extend the railway line and telecommunication services to the towns of Juba, Yei, and Wau in southern Sudan (*The New Vision* 12 July 2004). Kenya through linking with southern Sudan can provide transportation services, especially in connection with oil in southern Sudan, as the Southern Sudan government prefers to export to Mombasa instead of Port Sudan. Kenya's rail services provide an alternative for transporting oil to Mombasa given that a pipeline is not feasible, as gravity would work against it. This is particularly associated with the economic boom that is anticipated to follow the signing of a peace agreement between SPLM and the government of Sudan (*The Nation* 17 May 2004). More recently, realising that the Sudan could become lucrative to do business with, Egypt has made efforts to develop shared infrastructure with the country. Work on a 144-kilometre road on a 50-50 basis between the Sudan and Egypt, linking Port Sudan and the southern Egyptian town of Aswan should be accomplished in 22 months' time. This should prove a vital coastal thoroughfare which the Sudanese roads minister anticipates to provide political and economic benefits (*Sudan Tribune* 20 June 2004). Meanwhile, Egypt's minister of water resources and irrigation said that Egypt and the Sudan have agreed to set up an Egyptian-Sudanese company to develop the Nile River navigation course (*Sudan Tribune* 20 June 2004). A network of roads and rails is therefore important to benefit from infrastructure in the other Nile riparians. This should target the goal of an ever-increasing integration of Nile riparians.

Naturally, these roads, emerging from or extended to Sudan, would break the semi-isolation the Nile riparians have lived with in relation to each other. This

means frequent movement of individuals and families across the borders for work, study, or even tourism. In the longer run, Nile riparians should facilitate the free movement and settlement of population in any part of the basin. A Sudanese scholar and diplomat, Jamal Mohamed Ahmed writing in the 1960s, expressed his belief that a confederal union of the Nile states would be possible to accomplish (Abulgasim 2000:34). He aspired for a “United States of the Nile”, comprising Uganda, Ethiopia, the Sudan, and Egypt (Abulgasim 2000:31). Now four decades have elapsed since that dream sprang up, a period during which such a thought could hardly be conceived. Several attempts between leaders in the Sudan and Egypt to unite these countries failed and in fact generated resentment.

While forces driving towards integration among Nile riparians seem unstoppable, it is authoritarian decisions that harm them most. Memories of “resource capture” and “ecological marginalisation”, in fact, generate resistance instead of facilitating imposed population resettlements. An example is the recent unrest caused by the announcement in Cairo that the Sudan would happily give agricultural lands to Egypt. It was in fact rumoured that the government was selling 1.6 million *feddans* in the vicinity of Argin in Wadi Halfa Province in northern Sudan to Egyptian companies. The commissioner of Wadi Halfa Province was pressed to address the people, telling them that the news of selling land was baseless and that the 1927 land regulations prohibit government from selling any Sudanese land (*Al-Sahafa* 19 July 2004). This can be viewed as an example of how difficult it will be to overcome the mistrust sown by the past. Ruling elite in the Sudan and Egypt apparently must seek a degree of consensus with Sudanese “minorities” for a sustainable development of the Nile waters. Continuing with authoritarian development paradigm, necessarily ecologically marginalising the larger majority of the Sudanese communities, would mean increased water scarcity and, therefore, high possibility of conflict between the two states.

## 11.6 Conclusion

Apparently solutions to be sought by the Sudan for augmenting its water supply require new thinking as to how to maintain the water partition in the NRZ and upstream RZ and a new attitude as to how the Sudan should go about its relationships with its Nile co-riparians. Initially, however, the Sudan has to rehabilitate its NRZ ecosystems, through supplemental irrigation, which essentially should serve the goal of regaining the rains in this zone. Supplemental irrigation from underground water sources distributed through irrigation methods suitable to each locality should help rain-fed crops mature and increase their productivity and should provide fodder for herds as well as help achieve a degree of reforestation. This chapter suggested active participation of local communities through water/land parliaments in definition-making and decision-making to develop their localities. Associated with their indigenous knowledge, these communities through using supplemental irrigation to support their NRZ/upstream RZ indige-

nous crops, such as millet, and indigenous trees (for forestation) such as *acacia senegal*, especially with the latter's special soil-improving and stabilising qualities, they might prove to be the best in fighting localised deserts and ultimately in preventing the desertification that is threatening the whole of northern Sudan. Supplemental irrigation, in this respect, will contribute directly to improving the livelihood of local communities and, therefore, preserving the environment.

Additionally, the chapter suggested that the Sudan must augment its water supply by developing the expansive swamps in its southern upstream RZ, though, this must be done with a "hydrosolidarity" vision that guarantees the equitable distribution of water between human and ecosystem needs. At the heart of the development of swamp water, however, should be the needs of the local communities in southern Sudan which were maddened by the authoritarian development policies, the result of which was their resort to arms and fighting the RZ-seated government for lengthy decades. Adequate sustainable development of the swamps region, observing the principles of hydrosolidarity, will maintain the humidity and support the cloud formation necessary for adequate rainfall in the adjacent relatively NRZ drier regions.

The Sudan, indeed, needs to adopt basin-wide hydrosolidarity principles, avoiding antagonising its thirsty northern co-riparian (Egypt) and simultaneously avoiding depriving its water-giver upstream co-riparian (Ethiopia). The country should seek to "compensate" for what Egypt considers its "loss" of the swamp waters. While Egypt might not appreciate it, the solution lies in the storing of Nile waters in the Ethiopian highlands and necessarily meeting Ethiopia's need to benefit from these stored waters to irrigate its own lands. This implies that the Sudan should maintain strategic relations with Ethiopia, necessarily supportive of the latter's needs for irrigation waters.

In the longer-run, the Sudan needs far more water than it has within its territory or what might be saved from evaporation by storage in the Ethiopian highlands. With arable lands requiring more than nine times the total discharge of the Nile, the Sudan under a stable political regime within its own borders and in neighbouring DRC may seek to transfer waters from the Congo River. This inter-basin transfer solution implies the involvement of all riparians as beneficiaries. Overcoming Sudan's domestic water scarcity depends currently and in the longer run on how it seeks to establish and maintain hydrosolidarity, both domestic and international. To pursue its water supply augmentation strategies effectively Sudan should operate as the link between the Nile co-riparians. Sudan has a pivotal position in integrating the economies of the Nile riparian states – this is also its best strategy for not antagonising Egypt and not isolating Ethiopia.

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## 12 Conclusion

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### 12.1 Introduction

Presumably, the Sudan should not have suffered a water scarcity, for it was believed to have a huge “alternative water sources” far beyond its share in the 1959 Nile Waters Agreement. Some few years back the Sudan was considered a water-abundant riparian state or, at least, one that would not suffer water scarcity before 2050. However, the Sudan today complains that it is facing water scarcity. This study showed the Sudan as a typical case of a riparian where socio-political factors have generated water scarcity in the midst of water abundance. It was excessive power, historically vested in and seated in the downstream RZ that generated stark water scarcity and water poverty. Sudan illustrates how structural inequality renders unsustainable what was historically sustainable and potentially could again be made sustainable. The entrenched frontier-cast ideology, which evolved due to geopolitical reasons, involving colonial powers and maintained as the vision of the elite in the downstream RZ until today, caused the large-scale destruction of natural resources in the Sudan and ultimately generated real water scarcity.

We noted that besides the notable three major factors that could be considered to cause water scarcity in the Nile Basin and necessarily in the Sudan, i.e. rapid increase of population, failure to augment water supply, and a possible decrease in current flow of water, there is one more important factor that has remained a lacuna. This is the impact of population concentration, which to us represents the major cause of current water scarcity in the Sudan and in the Nile Basin at large. In order to see the deeper causes of population concentration we adopted a historical analytical approach – a “process tracing” in order to distinguish the antecedent conditions which gave rise to and contributed to what would generate water scarcity instead of water abundance in the Sudan.

Thus, although our focus is the period from 1820 to 2004, we also reflected on what we called the “millennial regime”, referring to the era before the period under study, for which we broadly overviewed relevant historical events. We then moved to consider four regimes (three historical and one currently in the making, however shaped by the three previous ones) and how in all four the most dramatic events related to the Nile took place in the current Republic of the Sudan.

Pursuing its own interests, primarily water supply augmentation, the Sudan proved to have a pivotal position in the Nile system. We exhaustively studied the causes behind Sudan's pursuance of water supply augmentation by focusing on the social effects of environmental scarcity. Sudan may play a pivotal role in the Nile Basin because it occupies 63.6 per cent of the total area of this basin and because it is within Sudan's territory that the unified Nile and its major tributaries take shape. Sudan may claim some significance because it borders the two most important Nile riparians in terms of supplying water and consuming it, Ethiopia and Egypt, respectively. While these two riparians are feverishly competing over Nile waters, the Sudan must deal with both of them in order to secure the water necessary to overcome pressing food shortages and to realise its immense agricultural potential. Sandwiched by these two strategic neighbours, the Sudan may strive not to antagonise or destabilise either, at least, to the extent that it may be brought into a war with them.

Below, section 12.2 summarises the main argument of this research, showing how socio-political factors are behind water scarcity, primarily, by generating structural inequality and environmental scarcity which shaped the relationship between the downstream RZ and its surroundings. Section 12.3 sums up other arguments, tracing the historical and current interactions between the RZ and the NRZ. Section 12.4 recaps how the "domestic" has been crucial to transforming international Nile hydropolitics and how external intervening factors have contributed to reshape its current transitional arrangement of the NBI. Section 12.5 proposes population concentration in the border regions between the Sudan and its two neighbours, Egypt and Ethiopia, as a means of rationalising relations among them. Section 12.6 proposes some policy recommendations, primarily for regaining the rains and augmenting water supply.

## **12.2 Main arguments: Socio-political factors as primary causes of water scarcity in the Sudan**

Unlike arguments appealing to population increase as the cause of water scarcity, as predominates hydropolitical analyses, this study exhaustively presented the view that the water scarcity currently experienced at the domestic level in the Sudan is caused by environmental scarcity, by its causing the population of the NRZ and upstream RZ to concentrate in the arid and semi-arid downstream RZ. More precisely, water scarcity in the Sudan is caused by structural inequality in powers between groups of actors and regions initiated and reinforced through administrative, legal, and spatial regulations and economic development policies, particularly in stimulating large-scale resource capture and, therefore, causing ecological marginalisation. Water scarcity is largely caused by the way power is being played out – how the geopolitical importance of the Nile is conceived, how political alliances are formed in association with modern irrigation, and how agricultural lobbies influence the issues of land use, distribution, and conservation.

An antecedent condition resides in Egypt's haunting pre-1820 fear, which invoked its invasion of Sudan and had great influence on shaping power relations in the Sudan. We elaborately showed that the Nile water was at the core of the process of generating structural inequality associated with processes of coercive annexation of regions in a centralised political system with the Nile Valley becoming dominant over all other regions in the Sudan.

The downstream RZ, which geopolitically became the depot for making the political alliance in the Sudan in the late nineteenth century and early twentieth century and for subduing the NRZ and upstream RZ in the three decades to follow, benefited from earlier development of Nile water. We detailed how the farming communities of the downstream RZ received special attention from the British administration. It restored to them some significant concessions, the most important among which, however, was the private right to land, while lands in the NRZ and upstream RZ were rendered state-owned with communal usufruct rights for their original owners. This ultimately gave some security to the downstream RZ, which early on adopted small- and medium-scale pump irrigated schemes; enriched the central RZ through a tradition of large-scale projects; and impoverished the NRZ and upstream RZ. These latter zones, as detailed in the previous chapters, were impoverished by aggressive processes of resource capture and the consequent ecological marginalisation of their inhabitants, while structurally being linked to the exploitative economic centre. Ample evidence was provided in these pages showing that these processes caused chronic food insecurity in regions that were historically food-surplus (the NRZ) or food self-reliant (the upstream RZ), causing localised and regional conflicts, and finally inducing mass population displacement accompanied by the disintegration of institutions and social relations. The ultimate result of this combination of environmental social effects was population displacement and its concentration in the downstream RZ, entailing an increased demand for Nile water.

The pressures exerted by population concentration, for which we provided extensive evidence in the downstream RZ, necessitated expansion of irrigated area, for which purpose IDPs in the downstream RZ were resettled. Our study shows that while such institutional responses made the Nile water scarcer, because of the additional demand they imply, this same population concentration, particularly in urban areas, threatens further scarcity of Nile water. In the long run, pollution caused by rapid urbanisation in the RZ will reproduce water scarcity and, if allowed to continue without adequate institutional responses, it may result in "hydrocide".

Dynamics at the domestic level in the Sudan significantly contributed to this change. Our study clearly indicates that the Sudan is but the diminutive picture of the Nile Basin at large. Environmental scarcity has triggered some major changes in the Nile hydropolitics at the international level. Yet similar to the domestic level of the Sudan it is regional power relations which generate this environmental scarcity basin-wide. At the Nile Basin level, a history of fear, threats, and sabotage

of fellow co-riparians' policies for economic development is behind water scarcity. Power relations and geopolitical games made these uncooperative measures the prominent pattern of hydropolitical interaction in the Nile Basin until the late 1990s. By this time, a series of bottlenecks started to surface associated with droughts, sedimentation, and inundation, which seemed to aggravate conflicts. However, these eventually led to a basin-wide framework for cooperation, the first of its kind in the history of the basin. For the first time the Nile riparian states seem to have overcome their mistrust, nationalistic assertiveness, and unilateral thoughts and actions which had characterised their long journey towards cooperation, which was detailed in this study.

### 12.2.1 International rivers and adjacent watersheds: The need for hydro-solidarity

The current change of attitude of the Sudan towards its two major co-riparians was the outcome of a long and slow process. Pressures at the domestic level in the Sudan and at the regional level in the Nile Basin show that conventional conceptualisation of water scarcity and accompanying geopolitical and regional alliances may not lead to sustainable use of the Nile waters. Studying environmental scarcity in the Sudan in this research opens new windows for the study of hydropolitics and poses fresh questions with regard to the conventional unit(s) of analysis. While literature on international rivers has, epistemologically, focused on the upstream-downstream relationship, as the object of knowledge, the RZ-NRZ relationship seems to have equal if not more importance in defining the sustainability of river systems. The dynamics we studied in the Sudan in connection with the Nile call for the de-territorialisation of the "basin" as unit of analysis if the causes of water scarcity are to be properly conceived. There is a need not only to see the interactions between basins but also the interactions among their component sub-basins. This also calls for attention to be given to the much detailed interactions between the "RZ" and "NRZ" in each basin and sub-basin with the aim of figuring out the power relations and possible ways of establishing hydrosolidarity; i.e. transforming the current inequitable development. The relationship between the downstream RZ on the one hand and the NRZ and upstream RZ on the other, for instance, appears to be a clear case of inequitable development; or, to be more precise, a case of development of the former and underdevelopment of the latter. There is a dire need to give greater consideration to the RZ-NRZ relationship, it being crucial for defining the sustainability of river systems.

Clearly there is a gap in the literature on the Sudan with regard to how the development of the Nile has affected the wider ecosystem, therefore its composing localised watersheds. Similarly, as the result of the denial of the complementarity between these components, i.e. the RZ and the NRZ there is clear gap as to how the localised watersheds in the Sudan affect the Nile River. This will remain a fresh research frontier, which should attract future research-

ers for understanding domestic hydropolitics and its impact on the international hydropolitics of the Nile. Similarly, for policy makers, this implies that Sudan's Nile River watershed management should espouse a concern with the integrated management of adjacent watersheds comprising this country's total national territory. It should, specifically, consider how the Nile's development interacted with and reshaped these adjacent watersheds and how dynamics within them affect the Nile's watershed with the goal in mind of regaining the rains and sustaining the balance of "blue water" and "green water". These new concerns are necessitated by the actual impact of the social effects of environmental scarcity and the conceptualisation we developed of them.

This study demonstrates that at the domestic and larger regional scale, environmental scarcity has transformed relationships in the Nile Basin so dramatically, asserting as a top item on the agenda a need to widen the scope when viewing the dynamics along and around a trans-boundary river. In fact, the need is for an "eagle eye" to picture all dynamics along the RZ and in the NRZ (the surrounding watersheds). The four components of life in the Nile Valley, i.e. "the desert", "the Nile", "the Nile Valley's relationship with the outside world", and "relationships within the Nile Valley itself", deserve keen attention in order to bring on board the complex interactions they embody and the complementarity they necessitate. Our general acquaintance with the large body of literature on the Nile helps us conclude that, in the past, these components merited different degrees of attention, depending on what researchers considered to be the driving force at the time in and around the Nile Valley. Though the classification into four such components is essential for understanding the regime of the Nile, the bulk of the literature has been insensitive to the flows between and among them. Thus, in most cases, as noted in Chapter 1, the Nile was tackled as a river (blue water), then as a valley (irrigated lands), but not in relation to the outside world, including the desert and watersheds comprising drylands and wetlands in its surroundings, let alone in relation to regions adjacent to the latter that nonetheless have an effect on the Nile's hydrological and socio-political regime. The "green waters" of adjacent watersheds were viewed as a resource ready for tapping, not as assets for developing their area and compensating these areas for what they had lost in their relationships to the centres of power. Moreover, the literature has discussed the Nile Basin in the Sudan largely in association with states and regimes of power, *not* in association with economic, primarily livelihood activities of different communities in their different local watersheds and in relation to the ecological needs of these watersheds. The gaps in the literature noted above and which should be bridged if a sustainable regime in the Nile Basin is to prevail, are the outcome of history and culture in the Nile Valley, primarily reproduced within a state-centric epistemology. We attributed these gaps, in our analysis, to a predominant "downstream-centrism", which essentialised "blue water" and irrigation and established the tradition of large-scale projects driven by agricultural export and a "cotton ideology". We also, most importantly, attributed this to the geopolitical

change which long rendered the Nile Valley dominant over adjacent regions. From 1820 until today, the sub-statal actors in adjacent watersheds were subdued and remained without any significant influence on the Nile Valley.

However, it is the evolution of the Nile societies, especially in the last 180 years or so, which brought dramatic changes in the prevailing downstream-centrism, particularly the last three decades of this period, at both the national and international levels. While the description of the Nile as the archetype of the usual historical pattern of international river basin development applies to the whole river, it was also typically the case inside the Sudan's territory. Thus, whereas Nubia, particularly the arid RZ, started developing its Nile in 2000 BC, the central RZ effectively engaged in this pattern (in a scale larger than in the Gezira area during the Funj Kingdom) only from the early twentieth century; and the upstream RZ has yet to consider leaning on irrigated agriculture. Analysis in this research shows what might seem for a moment to be a paradox: that while the international river basin development is steady, increasing the possibilities for conflict because of the upstream riparians engaging in irrigation (i.e., increasing demand for this river's "scarce" waters), it is cooperation that is more to be expected. This is so, in our view, because this very evolution demystifies the River Nile – opening it up towards its adjacent watersheds and making it known to a wider geographical neighbourhood. The process of demystification, however, involved some radical changes influenced by transcontinental tribal immigrations, invasions, and regional alliances.

Related to our above contention that the Nile was tackled first as a river, then as a valley, but not in relation to the outside world, is the fact of the Nile being essentialised as a drainage ditch carrying these quantities of water and silt to replenish its "gift", i.e. both the arid northern Sudanese Nubia and Egypt. The latter, thus, under different regimes, including colonial powers, developed a keen attention to the Sudan, a process which reshaped its politics, economy and population distribution. This thesis presented historical evidence that Egypt, under its Turkish rulers, depopulated the downstream RZ in its first adventure of advancing southward, especially in the period between 1820 and 1840. Later, in the 1960s, the inundation caused by its High Dam depopulated the far north in alliance with the military dictatorship of the time. In its second adventure, Egypt, or, more strictly, its colonial master, Great Britain, made all rivers in the upstream pour their waters for its sake through legal arrangements signed by this most powerful nation on Earth at the time. We elaborated on the impact of the two adventures, most importantly, how they carved out the Sudan – a country that largely came to exist as part of Egypt's strategies of controlling the Nile. Our study shows that while Egypt's two adventures gave absolute dominance to the Nile Valley (the downstream RZ) over all other Sudanese regions, the NRZ and upstream RZ alike, it was the creation of the riverain elite and reinventing the worldview shared with these elites and Egypt (derived from an imagined community, translated to a call for "Unity of the Nile Valley") that sustained this dominance.

Historically, the downstream RZ (Nubia) itself was not different in establishing its own “Egypto-centrism” (downstream-centrism) when it came to relating to its immediate upstream. Chapter 9 discussed how Egypt and Nubia were members of an “imagined community” moulded by the nature of the river itself. It showed how, later on, the hegemonic political ideologies in the Sudan, in fact, came to perceive the Nile as a downstream RZ, embodying the spirit of the *valley* (i.e. from the surroundings of Khartoum to the Mediterranean Sea) and, therefore, espoused the ideology of the “Unity of the Nile Valley”. We explained how espousing this ideology was a necessity for the ruling elite, primarily, to maintain political and economic control in an expansive setting, which the very process of carving out the Sudan generated. The Nile Valley in the Sudan, seen largely as the downstream RZ, became the seat of power, the domain of rights to private ownership of land, the cradle of civilisation, and a symbol worth protecting from hazards supposedly caused by intrusion of groups from the NRZ and the upstream RZ. We analysed several administrative and security-driven regulations meant to keep the NRZ and upstream RZ communities away from the downstream RZ, such as eviction and deportation; economic pressures, such as deprivation from farmlands and urban services; and disciplinary and punishment regulations (*sharia* laws) necessitated by a perceived violation of immigrant communities of codes of conduct of the hegemonic “high culture” in the downstream RZ. These juridico-political, socio-economic, and cultural regulations expressed an entrenched “downstream-centrism”, which rendered problems in watersheds of the NRZ and upstream RZ less visible. These problems, including severe environmental degradation, localised conflicts, and food insecurity were hardly considered, even when such consideration could serve the purpose of lessening the intrusion of “outsiders” into the downstream RZ. The juridico-political regulations which dominated the relationship between the downstream RZ, on the one hand, and the NRZ/upstream RZ, on the other, thus, left hardly any place for hydro-solidarity. Negligence of the problems in the NRZ/upstream RZ, in fact, made everything flow downstream to the central RZ, generating the major cause of water scarcity therein.

Negligence of the problems of the NRZ and upstream RZ operated precisely through the largely constructed cultural divide in the Sudan. With the historical determinism of the Nile in moulding an “imagined community”, Sudan became clearly divided between the “gift of the Nile” (the downstream RZ with a tendency to unite with Egypt) and the “giver” of the Nile (the upstream RZ). The latter, in modern times, was permanently made to produce and *give* to the former, not only to maintain the gift but to increase it.

Development projects in the Sudan’s downstream RZ were considered good for the nation at large, despite the fact that they actually caused immense environmental damage through overwhelming fragile environments or through vesting power in the hands of the agricultural lobby with their destructive role, as detailed in Chapter 4. This, in fact, reflects the usual position and attitude of the downstream, any downstream, towards the upstream (in the case of the Sudan, the

upstream RZ and NRZ) – that it marginalises the upstream and takes no cognisance of that which is not a river, i.e. the NRZ. This same perception seems to have stamped out attempts at cooperation among basin states. As a way of thinking, it is characterised by viewing the Nile as an Egyptian river, which largely renders unquestionable Egypt’s evolving claims on the river’s waters, while seemingly considering the upstream riparians to endure archaic sources of livelihood. An “Egypto-centric” reading of the dynamics in the Nile Basin has often leant on the existence of “alternative sources of water” available to the upstream riparians, which they should use instead of the Nile water and such resources seem never to be depleted. The most serious outcome of this perception is that any claims in the upstream to a share of Nile waters are considered not righteous claims or even conspiracies. In line with this, ordinary political protest in southern Sudan against central governments in Khartoum ranks immediately as a conspiracy against Egypt. This prowess to demonise southern Sudan has deepened agonies in the upstream RZ and proved counterproductive. This state of affairs in the Nile Basin was subject to frequent changes; however, it gradually opened up the Nile Valley to its surroundings. This is essentially a process that stirred the “imagined community” of the Nile Valley, reflecting the relentless evolution of the river’s mid- and upstream.

Our analysis shows that the Sudan (Nubia, the central RZ, and the upstream RZ) in connection to the Nile is actually in a transitional regime. It has been evolving with some significant impact on the use of the Nile water, starting some 1,600 years back, when activities taking place along the Nile Valley began to link north to the Mediterranean Sea and west to the southern expanses of the Sahara. However, despite this long evolution, it was only in the last 180 years that such links became more frequent, marking the detachment of the Sudan from the politics and economies of the Sudanic belt and geopolitically positioning it along the Nile axis. This is when the Nile Valley became most politically dominant over the regions in its surroundings, including the wetter upstream RZ to the south and the kingdoms and communities of the NRZ to the west and east of the Nile. It is this evolution, seen in three major transformations (detailed later), which defined the Nile regime in different historical epochs in the Sudan, especially in relieving this river from the stress of water scarcity in earlier stages or, otherwise, generating scarcity along its banks, as lately. This evolution, besides defining the degree of abundance/scarcity of Nile water, has increasingly unveiled the mystery of the Nile that has long been the cause of fear and mistrust and, therefore, blocked mutual advantage and effective cooperation among Nile riparians, ultimately generating real water scarcity. Two contingent processes, one of relieving/stressing the Nile, resulting from the direction of population movements away from/towards its downstream RZ and one of unveiling its mystery, brought dramatic changes to the Nile Basin.

## 12.3 The long journey of exposing the Nile to its surroundings

Although “alternative water resources” – alternative to Nile waters – are considered necessary for meeting the water demand of upstream riparians (or communities), therefore decreasing the pressure on the Nile water, no studies were conducted to show how accessibility and sustainability of resources in the abode of “alternative water resources” are affected by relating to the Nile Valley. This study looked extensively at the historical interactions between the Nile Valley and its surroundings as a necessary step towards sustaining the resources of these surroundings. To optimise benefit from “alternative water sources”, a sense of history is needed to conceive the evolution in the relationship between the Nile Valley and adjacent watersheds.

### 12.3.1 Earlier “open frontier” for relieving the Nile

This study analysed three dramatic transitions that took place in the Nile Basin in the Sudan. The first and most significant transition in the Nile Basin, which endured for millennia, was spurred by the introduction of the camel to the region on the southern fringes of the Great Desert around the end of the third century and the early fourth century AD. This process was further reinforced by the Arab nomadic tribes’ immigration in the period following the appearance of Islam in Arabia. The “cameleers”, who became the “geographers” of the time, had established for the long enduring interaction between the southern fringes of the Great Desert (NRZ) and the Nile Valley (RZ) on the hand and between these and the Mediterranean coast through long distance trade caravans on the other hand. They have made the southern fringes of the desert more attractive for more camel herders who came with large numbers of camels. The early seventh century was the time when stark water scarcity should have taken place due to the large numbers of immigrants and the limited, narrow strips of green along the banks of the Nile in Nubia. However, the prevailing political and administrative regulations in recipient areas, i.e. in Nubia, along the downstream RZ, made settlement an unpleasant option for immigrant nomads while incentives in the NRZ courted them, hence, blocking water scarcity from materialising. Pushed away by centralised regimes on the banks of the Nile, these Arab nomadic tribes traversed westward and colonised the most cherished, yet largely uninhabitable, expanses of the desert fringes and the semi-desert and engaged in an effective long-distance trade between the Mediterranean and sub-Saharan Africa. The camel, at the core of the economic activity of the nomadic immigrant tribes, served as the demystifying agent, facilitating expansion into the westward frontier, linking Sudan’s Nile to the Great Desert as it was previously linked to the Mediterranean Sea. The involvement of the Sudanese and Egyptian *jellaba* in the long-distance trade became central in this process and the region gradually opened up to their geographic conception. The significance of this change was that the Nile Valley in

the Sudan was relieved from pressures, as the desert and the Mediterranean Sea, respectively, absorbed the nomadic sector and added another source of generating a living from long-distance trade. During this period, “virtual water”, in the form of grains, flowed up the river from Egypt to Nubia, as the Baqt Treaty implied in the period between 652 and 1172 AD. However, most importantly, and because of the dynamics initiated by this treaty the relationship between the Nile Valley and the western and eastern plains evolved more strongly.

In the NRZ the cameleers’ most significant effect was their short-distance southwards pushing from the fringes of the desert and mixing with the indigenous groups in the relatively wetter zones. This research suggested that these nomadic tribes traversing into the new frontiers, in fact, created incentives for more groups to migrate out of the downstream RZ and to come from the coast of the Mediterranean Sea. We suggested that these tribal movements established a notion of an “open frontier” available for an ever-westward and shorter distance southward expansion. Courted by incentives in the new “open frontier”, as this study shows, were not only the immigrating nomadic tribes, but also Nubians who felt the stress of their environment at home, who were encouraged by the venturesome temper of moving outward from the Nile Valley. We analysed how the new relationship between the downstream RZ and the NRZ became one of relieving and protecting the former. In this earlier period, indigenous groups, of which the Nuba, the Shilluk, and the Denka are examples, inhabited the regional neighbourhood of the Nile Valley. These groups – ones that might turn to irrigated agriculture should their rainfed livelihood systems collapse – were persistently pushed away towards the south and south-west by waves of advancing nomadic pastoralists. The latter, occupying some of these neighbourhoods, namely the desert fringes and the steppes zone, which are good for camels, had little interest in the river. It took more than a millennium for them to engage in agricultural activities on the banks of the Nile. In fact, this happened only in recent decades when droughts aggressively hit them. We concluded that nomadic pastoralism, in this regard, operated as a shield or another indirect arm of the downstream RZ centralised regimes. In pushing away possible Nile water users it protected the river from possible intrusion of immigrants from the NRZ and upstream RZ plains.

While the arrival of nomadic Arab tribes in the seventh century did not contribute to “exploring” the river, as they had little interest in the river *per se*, it was their alliance with the Funj and involvement in sufism, as analysed in Chapter 3, that gave them political significance. In connection with the desert expanses to the west and the east of the Nile Valley and after many centuries of inhabiting those regions, a group of them, the Abdallab, did perceive a benefit from a change in the balance of powers and became partners of the Funj, who invaded the Gezira from the south. The Funj and Abdallab partnership, with the former being the supreme rulers, continued for over three centuries ruling central Sudan, predominantly the central RZ, but also the RZ farther downstream and the adjacent NRZ regions, particularly the plains to the east. To the west, however, despite the significant changes at the mar-

gins of the desert, nomadic tribes were not able to venture for political control over the kingdoms of the Sudanic belt. They largely resorted to coexisting with their hosts. Many in the cloth of *sufi* religious men established a culture that guaranteed symbiotic relationships with indigenous communities and flexible tribal movements, which ultimately yielded or accelerated the shaping of the hybrid of the “Afro-Arab” Sudanese found today in and along southern fringes of the desert and semi-desert in the Sudanic belt. African Sudanese were retained as supreme rulers and nomadic “Arab” sheikhs occupied the second tier in the political echelon, with the autonomous rule of their tribes in a loose-knit overall political system. While the Funj Kingdom, at least, in some intervals, did unify the downstream RZ and the adjacent NRZ, it was only later by the end of the second decade of the nineteenth century that the Arab tribes started to play a major role in reshaping the polity of the downstream RZ, the upstream RZ and the NRZ. This was primarily due to the disturbance of the balance of powers by invasions from the north (driven mainly by the goal of controlling the Nile), and the cooperation of these “Arabs” as members in the political alliance formed by invaders and later as inheritors of the system established by these invaders.

One major lag of the camel adventure is, as noted above, that it did not relieve the downstream of its fears. While the desert was extensively mapped by cameleers, the marshes of the Nile and its headwaters remained unnamed, a mystery to the entrepreneurs on the coast of the Mediterranean. This is because camels cannot climb up into the humid highlands or ranch in the marshy expanses of the river and their rich savannah belt. On the one hand, this climatic determinism resulted in a cultural divide which would operate later in the nineteenth century as political capital for invaders from the north who aspired to control the Nile, and it translated to its worst manifestation as a cause of chronic political strife in the Sudan, establishing a north-south divide with a hydropolitical component. On the other hand, there was the obscurity of the nature of the upstream, as perceived by the downstream. Notions of water scarcity or a total halt of Nile flow due to human interventions started to take shape. This fear, imported from pre-nineteenth century events, gave credence and portrayed as water scarcity what is virtually a non-existing water scarcity. This constructed scarcity was then portrayed as a looming threat to Egypt. But most importantly, consequentially, this fear would bring the second most dramatic change in the Nile Basin, i.e. Egypt’s colonisation of the upstream.

### 12.3.2 Expanding the open frontier and accruing “alternative water sources”

The late decades of the eighteenth century and the early ones of the nineteenth century witnessed two important developments. One was that James Bruce, in 1770, reached the source of the Blue Nile and the other was that the Nile Valley in the Sudan underwent some upheavals that threatened the routes of caravans and

necessitated security measures. While the former event unveiled some of the mysteries of the Nile, the latter geopolitically linked, by way of securing trade routes in the expanses south of Egypt, the interests of groups in the downstream to those of the midstream. Thus, the centuries-long business of long-distance trade, at which the cameleers/*jellaba* excelled, stimulated the appetite of yet another group on the coast of the Mediterranean Sea and beyond for making gains from regions lying beyond the desert. This was through effecting a shift from fatalist to secular knowledge. It was the *moderniser* of Egypt, Mohamed Ali, the Ottoman's viceroy of Egypt, who would equip troops to advance upward along the mysterious river. The corridor of the Nile witnessed movements of troops armed with gunpowder and with ambitions to coercively "annex" to the Nile Valley the widely stretching regions to the west, east, and south. Mohamed Ali conquered the Sudan, bringing to an end the millennial independence of Nubia, marking a major geopolitical change in the whole of north-eastern Africa, and advancing Egypt's interests farther south than ever before. However, equally important, while the invading troops pushed hundreds of thousands of northern Sudanese into the "open frontier" and took many as slaves as they were advancing southwards, Egyptian explorers made an important discovery – realising that the Nile River has no connection to the Niger River. The following decades witnessed the expansion of Turkish Sudan, involving the largest parts of the current Republic of the Sudan.

We elaborated on how the beginning of this second major transition in the Nile Valley region was in effect a strategy of redistributing the downstream RZ population through pushing them upstream into the wetter regions of the upstream RZ and the NRZ. In their southward march, the Turkish invaders crushed Sudanese kingdoms, terrorised and pushed away hundreds of thousands of riverain population, including some of the *jellaba* merchants, initiating a south-western "open frontier" for expansion. In addition to terror, redistribution of population also took place through the attraction of new opportunities in these zones, and in response to the continuous pressures in the downstream RZ.

Besides fear and escaping terror, the Turkish invasion created opportunities in the hinterland of the NRZ and upstream RZ, which reinforced population redistribution trends. As the largest proportions of the population were pushed to the upstream RZ and the NRZ, the core of the economy itself seemed to follow them, and these regions became the abode of production of cash crops, the home of new towns, and the knot of important trade routes. Thus, one significant factor that reinforced the population redistribution away from the downstream RZ was that the productive centre of commerce and exchanges was not on the confluence of the Niles. It was largely in the gum arabic belt, especially around the old capital towns in Kordofan (Chapter 6), associated with gum as the top export crop in the country. This meant that the regions bordering the Nile Valley sent their labour to the hinterland of Kordofan, which turned into a flourishing niche for *jellaba* peddlers and European retailers, and gum tapping and collecting labour.

The continuous pressure in the downstream RZ, especially the lack of land, was always an important population redistribution factor. In this study we have noted the movement of the Nubian communities before the Funj Kingdom and the unprecedented emigration of landless peasants and private merchants – the vanguards of settlers in the NRZ – when this kingdom started to disintegrate. During Turkish rule some of the land-hungry riverain groups and nomadic tribes already inhabiting the fringes of the desert found a great opportunity to move southwards. Nomadic tribes, influenced by climate changes pushed ever-southwards and riverain groups explored the hinterland riches through the networks they established with these nomadic groups.

We may derive from our analysis that this population redistribution had implications for the Nile hydropolitical regime by way of “exploring”, expanding, and carving out its boundaries, therefore, involving within these boundaries all streams that pour into the Nile system and what would become the “alternative water sources” in the Nile discourse. Another implication, which we analysed was present in the form of the political alliance between the invaders and the “Arabs” who were hosted in the upstream RZ and the NRZ, which essentially reinforced the expansion process, but most importantly, as a consequence, it planted a historical pattern of conflict between the stock of the downstream RZ on the one hand and that of the upstream RZ and the NRZ on the other. Throughout the four decades following the 1820s, mass exodus of riverain Sudanese and nomadic Arab stock took place; groups escaping the Turkish terror and taking refuge mainly in the northern part of the upstream RZ and in the southern and central parts of the western NRZ. This also meant the cultural expansion of northern Sudan and the establishment of networks that later pulled different parts of the Sudan together. But most importantly it represented the political capital for Egypt’s and Britain’s hegemony through their alliance with the Arab stock. We noted that the figure of displaced population might have reached 4 million from the downstream RZ alone and that the terrorised groups from the downstream RZ ultimately became “militarily” supreme or, more precisely, demographically numerous enough to have significant effect over host communities in the upstream RZ and NRZ. In fact, after the 1840s, the downstream RZ immigrants started to cause troubles in the Shilluk Kingdom in the upstream RZ. By the early 1870s, they had caused a significant shift in the demographic balance, taken power and ruled Bahr El-Ghazal and turned a keen ally of the Turks. Together with the Turks, they conquered the NRZ kingdom of Darfur in 1874. As such, they became a key actor in reshaping the second major transformation that, according to our understanding, reshaped spatial relationships and defined hydropolitics of the Nile.

Pushed away by or walking in the footsteps of the invaders, farmers from the downstream RZ and nomadic tribes from the fringes of the desert collided with the savannah inhabitants, a collision which took its dramatic form in the involvement of the former in mass enslavement of the latter. The collision between the “northerners”, who, ultimately, involved riverain *jellaba*, nomadic tribes, Turks

and, later, the British, on the one hand, and the “southerners”, i.e. inhabitants of the savannah and forest belts, on the other hand, marked the marsh toward a new “open frontier” by the former, characteristically founded on capturing resources of the latter. This scramble greatly relieved the Nile Valley from facing water scarcity, particularly in association with the “frontier-cast ideology”. This ideology especially evolved after the Sudan was carved out and its regions pulled together and positioned along the Nile axis, which channelled together the interests of the invaders, the riverain *jellaba*, and the desert fringes’ nomadic tribes. The most significant consequence of Egypt’s colonisation of Sudan was one of “generating abundance” in water, or more precisely, the Nile was further relieved from possible water scarcity, which may have been caused by withdrawals in the downstream RZ. Egypt’s invasion to Sudan in 1820 resulted in the depopulation of northern Sudan and the southward expansion of the “open frontier”. Irrigation in the downstream RZ stagnated or even halted for decades, relieving the Nile water again of stress. This was because large numbers of the previous *sagia* farmers were pushed out of their homelands and now settled and farmed or herded in the rainfed zones (in the NRZ and upstream RZ). A large number of them engaged in the flourishing trade of those regions.

Our analysis made the link between the forceful southward population movements and the emergence of the “frontier-cast ideology”. This is the earliest cause for what became the crux of hydropolitics at the domestic level in the Sudan – resistance to development of water sources in the upstream RZ with significant impact on international hydropolitics. Complicating water scarcity is that because of the above dynamics, the upstream RZ and downstream RZ, which are both generalised forms of ecological zones, increasingly came to represent cultural and political borders. The divide that rendered confrontational the relations between the upstream RZ and downstream RZ operated through coercive annexation of different groups to a centralised political system and increased imbalance of powers for the advantage of the Nile Valley.

We analysed how the Turkish invasion transformed Sudan’s loose-knit political entities into a centralised political system and how many autonomous communities were forced to succumb to rulers seated at the confluence of the Niles. Upon the end of the second decade of the nineteenth century an increased centralisation process was initiated. By the coming of the British, watersheds of the NRZ and upstream RZ were annexed to the downstream RZ, marking the final carving out of the Sudan in its current borders. British colonisation, which initiated the quasi-hegemonic regime in the Nile Basin at large, brought significant changes to the region. This study analysed how the process of building the political coalition, particularly during the British colonisation, paved the way for structural inequality in the Sudan. We showed how this colonisation initiated the alliance between the state and the downstream RZ farming communities and the creation of the “riverain elite”, a process which primarily took place under the Turkish regime in the nineteenth century, but had matured under British rule by the turn of the

century and prevailed and was consolidated afterwards. Economic modernisation in the Sudan, initiated by the British early in the last century, with the Nile waters as its locomotive, resulted in creation of the economic core in the central RZ, which favourably acquired the largest portion of every development initiative until today. We provided evidence on how the central RZ has always taken the lion's share. Our analysis underlined that the state, through large-scale public works (a tradition initiated by the British and maintained by national governments), provided subsidised services as a reward to riverain farming communities for allying with them. The concentration of economic development in the central RZ boosted the chances of communities therein, at the expense of those in the NRZ and upstream RZ and to some extent in the arid RZ. Negligence of communities in the NRZ/upstream RZ was visible in the deteriorating rural water supply and negligence of their traditional farming and pastoral sectors despite their high comparative advantages. Such negligence established stark disparities and ultimately influenced relations between the NRZ/upstream RZ and the central RZ.

An important area which we underlined in this study is how the building of the political alliance, with the use of Nile waters at its core, so significantly influenced access to resources, which Sudanese communities experienced under the "millennial regime" and which was somehow maintained until the early 1920s. We observed the transformations that followed; specifically, how the resources that were accessed through localised indigenous land-tenure systems were regulated through the intervention of the state, which used them to endow its supporters and how this ultimately led to ecological marginalisation. However, the most serious development that established ecological marginalisation, as our analysis showed, was the introduction by the British and maintenance by post-independence governments of a split land-tenure system, which gave private rights to land to the downstream RZ communities while rendering all NRZ/upstream RZ lands state-owned with only usufruct use rights to communities in those zones. We view this as the most serious cause behind the ecological marginalisation in the Sudan. The link we made is that this split land-tenure system facilitated and established the tradition of large-scale agricultural projects in the Sudan, which meant large-scale resource capture, aided internally by the ideology of nation-building.

This study detailed how the state's development discourse, together with the existing tenure regulations, entrenched the lobby of agricultural capitalists in the Sudan. Acquiring large amounts of capital through expansion in irrigated agriculture, this lobby looked to the untapped agricultural frontiers of the NRZ and upstream RZ, the consequence of which was the tremendous expansion of mechanised farming, literally the large-scale resource capture of NRZ/upstream RZ lands. The agriculturalist lobby of the *jellaba*, would push the state on different frontiers to assert its ownership of lands and fetch new sources of irrigation. The conception and construction of the Jonglei Canal for augmenting water supply was largely influenced by this lobby. The latter, implicitly, blocked any

appropriate land reform, therefore, jeopardising localised smallholdings and indigenous systems. The tradition of large-scale projects neglected the ethnic minorities' rights and ultimately damaged their subsistence economies. The relentless expansion of irrigated and mechanised farming, as well as the strategies for augmenting water supply, ultimately led to the ecological marginalisation of large groups of pastoralists and traditional farmers and persistent localised conflicts which finally led to the reduction in the "supply" of "green water", the alternative water source to the Nile. This reduction was caused by unprecedented environmental degradation, which accelerated the process of desertification and made the impacts of droughts even more severe.

We detailed how the expansion of the modern sector in the twentieth century overwhelmed the regions that since the 1820s and for longer periods of time received large numbers of population from the downstream RZ. In tracing the causes of environmental degradation in the Sudan, we explained how the political factors, since the 1820s, played an important role in desertification and how these were replicated by developments during the British and post-independence eras, such as over-grazing, restricting movements of population groups, over-cultivation, and urbanisation.

### **12.3.3 Real scarcity, exposing the stock of the "open frontier" to the downstream RZ**

What we consider an important development in the downstream RZ is the exposure of real population coming from the abode of "alternative water sources" – their exposure to people, particularly policy-makers, in the downstream RZ. These populations came from the area that had been conceptualised as "open frontier" and featured in the discourse of the Nile abstractedly and largely as wilderness. It now emerged as a region whose water resources needed to be developed to meet the real needs of real populations; otherwise, it would bring to the downstream RZ groups of population that would contest for its "meagre" resources. Water scarcity is now experienced not only with regard to Nile's "blue water", but also in the "loss" of the "green water", which was considered abundant in the abode of "alternative water sources".

The long processes of resource capture and the consequent ecological marginalisation, as our analyses showed, finally resulted in severe resource conflicts which devastated the NRZ/upstream RZ and blocked the "open frontier", which had historically relieved the Nile from pressure. The southward population tide, characterised by a shift in the balance of powers to the benefit of "northerners", driven by the frontier-cast ideology, established their superiority and generated agony and mistrust between them and the "southerners". It is this tense relationship, which, after more than a century, rendered rather impossible both the plans for increasing "blue water" supply to the downstream, through the Jonglei Canal, and benefiting from the "alternative water sources" – the "green water". Re-

gimes of resource capture degraded the local environments, generated localised conflicts, disrupted the symbiotic relations among rural communities, and caused and added fuel to regional conflict. They made the NRZ and the upstream RZ less accommodative due to relentless resource conflicts and food insecurity and, therefore, pushed large groups of population to out-migrate to the downstream RZ. We considered in this study the blocking of the “open frontier”, resulting from the dramatic degradation of its resources (and its “liberation” by its historical inhabitant) and consequent mass population displacement and concentration especially in urban areas in the RZ as the third most dramatic transition in the Sudan.

Tracing the history of food security and insecurity in the Sudan we showed that the NRZ and the upstream RZ, which were historically food surplus and self-reliant regions, respectively, now suffer chronic food insecurity. While the current food situation in the Sudan shows deterioration in both the modern and traditional food production sectors, it is the latter in the NRZ and upstream RZ which suffer the most. The environmental scarcity that actually was the outcome of unsustainable land-use regulations and the tradition of large-scale irrigated and mechanised farming projects – supposed to create abundance in food stuffs – actually meant sinking into chronic food insecurity. This was because the expansion of large-scale mechanised farming caused the collapse of subsistence economies, subjecting communities in the rural areas of the NRZ and upstream RZ to chronic food insecurity and famines. A whole subsistence sector, i.e. the pastoralist sector, for instance, is disappearing, meaning the loss of desert economic activities.

Our study showed that such developments resulted in significant changes along the banks of the River Nile. They totally changed its pre-nineteenth century population out-migration pattern – the millennial pattern of distancing from the River Nile. We explained how the making of the economic core in the central RZ resulted in the gradual reversal of the millennial population distribution pattern. Incentives during the British rule and continued concentration of development in the central RZ, the structural link of the traditional economies to it, and the impact of environmental scarcity during the last three decades, reinforced this reversal of the population distribution pattern.

Our investigation revealed that as early as the 1910s, large numbers of labour immigrants entered the Sudan to work in the irrigated sector. We provided a fresh investigation of the 1930s as a period of mass return of the groups which were pushed away from the downstream RZ by the Turkish terror campaigns, the Mahdists, and the British expeditions, back to the regions historically made unwelcoming or even inaccessible to them. We provided evidence of how large numbers of population continued, thereafter, flowing into the downstream RZ, especially into the central RZ. Everything “flows” into the central RZ – empire-builders with their soldiers, returnees, investors, labour immigrants, pilgrims, and political followings, and finally IDPs hit by drought and civil wars. Our investigation showed that between the 1920s and today, the population of the downstream RZ has increased at an enormously rapid tempo. Population estima-

tions and census statistics show the downstream RZ increased its population from 42 per cent of total population of northern Sudan in 1922 to 49 per cent in 2000. The central RZ, however, is witnessing the most dramatic increase, with its population increasing from 28 per cent to 44 per cent of total population of northern Sudan for the same timespan. However, in association with power, which regenerates structural inequality and, therefore, the potential for domestic hydropolitical wrangling in the Sudan, is the dramatic population concentration in Khartoum state. While the whole population of the Sudan increased 12-fold between 1904 and 1990 that of Khartoum Province increased 50-fold with its three cities now hosting a population of over 7 million. The Khartoum Province triples its population every 15 years. The speed of agricultural development in its surrounding is unmatched anywhere in the country, indicating that it will seek to control large amounts of water, and may well engage in conflicts over water with its neighbouring downstream RZ entities as well as with the upstream RZ.

Of all the flows of population in the last century, that of the IDPs in the past three decades signals a dramatic change in the Nile Valley's modern history. It shed more light on the yet mysterious part of the upstream RZ, this time, exposing the real population of what may have been conceived of as unpopulated wilderness. But it also, for the first time, generated real scarcity in the downstream RZ. Demand for "blue water" was added by large numbers of people coming from regions which had sustained their livelihoods with effective use of "green water" – regions where "alternative sources of water" were supposed to be sought to help overcome international tensions over the Nile's "blue water", which is believed to be scarce. We examined this increasing demand for Nile water by highlighting the shift from millet/cassava to wheat/sorghum cropping zones. The clearest indicator of this shift is the fact that (irrigated) wheat has now replaced (the largely rain-fed) sorghum as the staple cereal in the Sudan.

Demand for "blue water" is reinforced particularly by rapid urbanisation, where the latter means increased pressure on government by townspeople who, especially in Khartoum, have succeeded on two occasions to bring down military dictatorships. We noted how the historical processes of political and administrative centralisation and concentration of economic development in the central RZ transformed the nineteenth century forms of urbanisation, which continued with higher growth rates in the NRZ until the early decades of the British rule. The processes of increased sedentarisation and "deserting the desert" by nomadic groups resulted in rapid and uneven urbanisation, particularly between the RZ and NRZ and between the downstream RZ and the upstream RZ, with clear implications for Nile water. Our analysis clearly indicates that urbanisation in the RZ is faster than that in the NRZ and, importantly, urbanisation is more rapid in the upstream RZ than in the downstream RZ.

The implications of this population concentration in the downstream RZ involve, demand for water for irrigation, increased consumption for domestic needs but also impacts on water quality resulting from pollution, both of which contrib-

ute to generating water scarcity. We looked at the responses of governments to the presence of IDPs. We listed several measures, which the state used to block immigrant/IDPs from venturing into the downstream RZ, the “forbidden” region. Our study showed that while the state’s prohibitive regulations were effective for some time early on, they broke down at a later stage because of the tremendous flows of IDPs. The break down of state regulations blocking the central RZ in the face of immigrants and IDPs, was in fact due to the role played by the latter – the IDPs are not passive, they resisted the institutional regulations made to block them and claimed downstream RZ “citizenship”.

The IDPs’ increased resistance to the state’s restrictive measures compelled the state to adopt other accommodative measures. We elaborated on the institutional responses to pressure from IDPs, including their resettlement in urban and rural areas and catering for their food needs. We detailed how the state engaged, after the mid-1980s, in an official discourse about the IDPs, starting with the creation of the Higher Committee for Relief in 1984, followed by several other institutions in the 1980s and 1990s, through to the current Ministry for Humanitarian Affairs established in 2003. Associated with the heightening official food security discourse, we detailed the dramatic expansion of the irrigated area and what it necessitated in the form of an ambitious water-supply augmenting strategy.

In relation to the ambitious water-supply augmenting strategy, which is part of the National Comprehensive Strategy (NCS), we noted the perpetual expansion in irrigated agriculture, facilitated by increased flows of funds. This expansion, taking place almost on a monthly basis, has created its own momentum. The irrigated area expanded from 2.3 million *feddans* in the 1988/89 season to 3.1 million in 1991/92, to 4.9 million in 2003, and to 6 million *feddans* in 2004. Besides the pressure caused by population concentration, this expansion, being in the downstream RZ, is accelerated by the same old spatial imperative – increasing infrastructure concentration (water constructions) in the downstream RZ. This implies an increased demand for Nile water, however, with the most powerful region in the Sudan, i.e. Khartoum State, taking the lead in irrigated schemes. This situation has created real scarcity, where water needs are considered in the range of 31 to 38 billion  $m^3$ , while available irrigation water is only 20.5 billion  $m^3$ . We looked at the feverish engagement in “engineering of nature” to augment water supply, which led to the heightening of the Rosaries Dam, the largest in the country, from its capacity of 2.4 billion  $m^3$  to 7.1 billion  $m^3$ , the commencing of construction of two large dams (the Merowe and Kajbar) scheduled for completion by 2009, besides six other major dams which have been studied and are ready for financing. In addition to these, we pointed out that several small dams have been constructed along the *wadis* in Khartoum, Kordofan, Darfur, Northern, and Eastern regions with plans to construct more in the future, including in the NRZ regions of Darfur and Kordofan, where 10 small dams were already planned for each of the two regions. Improvement in the area of funding, including monies from Arab countries and the newly extracted oil

in the Sudan, have revolutionised irrigated agriculture beyond what anyone could have imagined just a short time ago.

In association with this engineering of nature for water-supply augmentation, we drew attention to a recent exceptional development, which is the construction of large development projects outside the old triangle of development between the two Niles for the first time since modern irrigation started in the Sudan, save the small pump schemes. This is to develop the “non-developable” arid RZ and, therefore, increase demand for water farther downstream. The arid RZ is witnessing increased construction of public facilities, including large dams, highways, a refinery, and new tourist and residential facilities. All of these facilitate and necessitate expansion of irrigated agriculture in association with population concentration.

To see if increased demand for water and concern with expanding the irrigated areas will continue, we investigated whether the current population redistribution and concentration trends will be sustained or whether a certain stage will be reached at which they settle. We enumerated several reasons why population concentration trends in the downstream RZ may continue their current lines for quite some time and the unlikelihood of IDPs’ returning to their areas of origin in the NRZ and upstream RZ. Reasons for this are the worsening of the conditions which originally pushed the IDPs out of their regions (drought, famines, and civil wars); the collapse of the localised communal social care system and loss of assets of IDPs upon departure; the IDPs adaptation through which they have found their own ways to eke out a living and settle in towns and irrigated schemes; and maintenance of the original “pull-factors” in the central RZ and, recently in the Arid RZ. Moreover, under the current peace protocols, IDPs are not to be compelled to return; in fact, their enduring pressures have compelled governments to resettle them in the downstream RZ and, therefore, “legalise” their current status. Finally there is no prospect for a “third Turkiyya” to depopulate northern Sudan and, therefore, evict the IDPs among others. Demand for water in the Sudan is also necessitated by the need to rehabilitate and resettle southern Sudanese and in general to develop the upstream RZ. Our analysis shows that this is not only necessary for the troubled region but it is now also financially possible (Chapter 8).

This study investigated how domestic dynamics in the Sudan are reflected within the dynamics of the whole basin. According to our analysis, transformations taking place in the Sudan on the irrigation front and in pressures of its upstream seem to have generated significant changes in this country’s foreign policy. The Sudan seems, for the first time, to be clearly crossing the “redlines” set by its northern powerful co-riparian, i.e. Egypt. Aspects of Sudan’s change of attitude towards Egypt and, specifically, its crossing the “redlines” are apparent in its seeking allies and clients who may be interested in real or “virtual water”. In the 1990s, the Sudan played three cards in a hydropolitical manoeuvre. These included alliance with Ethiopia, Egypt’s most difficult contestant for Nile water; its seeking deals with Israel, which Egypt historically erected as scarecrow in its Middle Eastern geopolitical arrangements; and its seeking deals with Arab oil

states as potential investors in irrigated agriculture and hydroelectricity, whereas such investments have always generated fears in Egypt. Our analysis showed that among these the strategic move by the Sudan to warm up relations with Ethiopia, the erstwhile distant co-riparian neighbour, was prominent in creating tension with Egypt while generating increased momentum for cooperation between the Sudan and Ethiopia.

In the 1990s, the Sudan and Egypt moved from historical alliance to serious conflict over Nile water. We explained this change by linking it to the new population contours, which seem to be the most important factor that questioned the validity of the claimed endurance of the “imagined community” of the Nile Valley. The historically proclaimed “Unity of Nile Valley”, due to this transformation, appears to have met with counter-discourses of anti-unity, or have been redefined according to the requirements and ambitions of an Islamic empire in the Sudan. However, seeing the new population contours in their current guise should not cause us to overlook earlier processes that may have contributed to the decay of the unity of the Nile Valley ideology. Associated with this, for the first time in its post-independence history the Sudan seems to be questioning the validity of the age-long Nile Valley’s “imagined community”. Complaints about Egypt’s unfair share in Nile water, the commencement of the NCS, and “water wars” language in the Sudan towards Egypt have replaced the rather serene relationship between the two great users of the Nile water. Egypt then sought to turn the tables by developing closer ties with the upstream riparians and considering the Sudan irrelevant or a mere drainage country. The Sudan’s move was not only a reminder for Egyptian strategists of the major changes taking place in the Sudan, but also may have caused Egypt to conclude that Sudan’s internal problems may not allow for developing the waters in its swamps region, and even if developed, they may not let significant waters flow to Egypt. The slogans of unity with the Sudan were thus deflated or redefined by the Egyptians, as Chapter 9 noted in the Sudan.

Calls for unity with Egypt have always been met with resentment, especially from southern Sudanese, who see it as primarily targeting their resources. Especially in association with the Jonglei Canal, the concerted efforts of (northern) Sudan and Egypt were considered an Arab colonisation. In this respect, Sudan’s internal hydropolitics has been to a great extent influenced by the imperative of augmenting water supply to Egypt. The stubborn resistance of the southern Sudanese to such interests has actually made their region an important geopolitical link which has a powerful say on Nile modalities. While the Sudan as a whole is considered one among the major three players – the master of the middle – its southern part stands as the (*de facto*) fifth player in Nile hydropolitics, following Uganda in the hierarchy of reshaping the Nile’s regime. Currently, domestic dynamics in the Sudan necessitate a more tangible role for this fifth player, specifically the impulse to carry out resettlement and rehabilitation programmes associated with a high possibility that this could financially be realised. Similarly,

a stable regime in the Sudan, especially under the leadership of agrarian parties, implies expansion of irrigated agriculture as a necessity for the state's consolidation in the Sudan. This might impact, at least, Egypt's future water supply.

We also briefly mentioned two developments that may affect Egypt's aspirations in the Sudan. These are, first, the redeployment, in the arid RZ, of capital previously being invested in southern Sudan and, second, new political assertions such as those made by the Kush Liberation Movement (KLM). These latter imply that competition and conflict will be high between the Sudanese agricultural lobby pursuing its own interests on the one hand and the government supporting Egyptian investors to maintain strategic relations with Egypt on the other hand.

We investigated in this study how the heating caused by Sudan's new attitude towards Egypt became more serious with the engagement of the former in deals over the Nile with the latter's most difficult foe, i.e. Ethiopia, in the upstream. The Sudan's recent rapprochement with this most strategic co-riparian, i.e. Ethiopia, with which it shares the longest border among co-riparians and with which relations had been almost permanently lukewarm, brought significant changes in the Nile hydro-politics.

Unlike its largely ideological ties with Egypt, Sudan has rationally practical benefits from getting closer to Ethiopia and they are largely associated with the Nile. Besides the short-term benefits, such as militarily pacifying the border with Ethiopia, there are some medium-term and strategic concerns in the math of Sudan. Floods, silt accumulation, and refugees, all descending from the Ethiopian highlands, have a direct and immediate impact on the Sudan's national security, which necessitates a realistic medium-term approach towards overcoming them. However, cooperation on the short- and medium-term concerns with Ethiopia are only signals for more strategic concerns, namely Sudan wanting more water from rivers descending from the Ethiopian highlands, whose supply could be augmented only if some form of cooperation with the major source of Nile water (i.e. Ethiopia) is reached. Sudan has all its cost-effective irrigation on this frontier. However, important to note here is that Ethiopia, from which Sudan's irrigation water flows, is itself going for more water. If cooperation with Ethiopia could help provide for the "extra" needed water in both countries then it would be more than worth pursuing. Sudan's rapprochement with Ethiopia should be seen as an attempt to avoid conflict with Egypt, though the latter seems not to appreciate this. Increasing the water supply will help resolve potential conflict with the major consumer of this water (i.e. Egypt) who is yet to aspire for more and from which any cuts by the Sudan under internal pressure of food needs may provoke a military reaction by Egypt.

Our analysis emphasised that the Sudan, unlike Egypt, is sensitised by its own condition. Sudan saw in its neighbour the same ills which itself is undergoing – droughts, soil erosion, food insecurity – and realised that the need for and utilisation of Nile water by Ethiopia is inevitable. This is particularly true in association with the food security discourse, which Sudan itself has continued to

re-emphasise. The change of perception about water scarcity in the Sudan in the 1980s and Ethiopia's concern about the Nile in the same decade thus were outcomes of environmental changes *par excellence*.

#### 12.4 Synergies between the “domestic” and the “international”

This study provided evidence on how the “domestic”, especially undergoing environmental scarcity, can reshape and significantly transform the international. One major development that we studied here and considered a response to impacts of environmental scarcity both at the level of the Sudan and the Nile Basin at large is the new cooperative framework of the Nile Basin Initiative (NBI), as a transitional arrangement adopted by Nile riparians for organising their deliberations until they agree on a permanent legal and institutional framework for the sustainable development of the Nile Basin. Unlike the early attempts at cooperation in the Nile Basin, the birth of the NBI, heralding the new regime of voluntary cooperation in the Nile Basin, is a response to the challenges posed internally by environmental scarcity. The NBI's emphasis on sustainable development of the river and taking decisions at the lowest appropriate level for facilitating the development of real action on the ground reflect some real attempts to contain environmental scarcity.

We addressed how environmental problems alerted a number of countries in the region and led to formation of the Intergovernmental Authority on Development (IGAD) and how the same awareness, generated by environmental problems, is behind Sudan's closer relations with Ethiopia, leading to the signing of the 1991 agreement between them. We showed how this agreement triggered a new wave of competition, leading to the signing of a framework agreement between Egypt and Ethiopia in 1993 and how this ultimately opened the window for more debate. We concluded from these dynamics that states' relations have gotten tenser; however, only to lead to an engaging dialogue, a certain challenge to the “water wars” thesis. The Sudan, viewed at the *international* level of the Nile Basin as a core state dependent on water for irrigation, has helped in critically assessing the “water wars” thesis and falsifying its core claims despite its own severe *internal* pressures. The Sudan shows how increasing scarcity could, so far, lead to cooperative engagement, which for the first time is bringing hope for the 10 Nile riparians. Sudan's strategic move of signing the 1991 agreement with Ethiopia, reflecting an earlier concern, broke the stalemate caused by the zero-sum game between the positions of Egypt and Ethiopia. Egypt is now hopeful for the strategic gains of more effective cooperation and is flocking together with its Nile riparians for mutual benefit as well as for international aid that it may not acquire if it remains alone.

We showed, however, that external factors are influencing the NBI. Thus, while the internal environmental pressures, cropping up in population concentration, represent the “necessary condition” for riparians' responses, the concern of

external actors operated as the “sufficient condition” for the success of the NBI. A *moralpolitik* condition seems to have influenced a number of international actors in reconsidering the deteriorating conditions in the Nile Basin and, therefore, has transformed upstream/downstream relationships. In the early 1990s, the United States, primarily, played a significant role in association with the new regimes in Rwanda, Eritrea, Ethiopia, and Uganda, but other international actors helped shape the new hydropolitical regime in the region. The *moralpolitik* condition was necessitated, at first by sustainability and poverty eradication discourses, where the World Bank, the UNDP, CIDA, and other donor countries have played an important role in facilitating the meetings of the Nile riparians. Inherent in this *moralpolitik* was the debate leading to the adoption of the Convention on the Law of the Non-Navigational Uses of International Watercourses. This convention showed that the principle of “equitable utilisation” had acquired similar weight to that of the “no harm” principle, which provided greater space for the upstream and a greater chance for dialogue with the downstream. Lately, however, terrorist attacks, namely those against the U.S. embassies in Nairobi and Dar-es-Salaam in 1998 and in New York 11 September 2001 gave a renewed importance to some of the Nile’s upstream riparians in the international security chain, to calm pockets of tension and instability. Interestingly, the security concern and the war against al-Qaeda engaged the Sudan, the most isolated country in the region throughout the 1990s, together with Ethiopia, in the regional effort towards stability.

The NBI, as an outcome of these, is celebrated as a great achievement. This study pointed out some potential gains from the NBI process for all Nile riparians, especially its facilitating the flow of funds which were somehow blocked by the water scarcity discourse and potentially by the “water wars” thesis. The NBI, however, is not a final resolution. Besides the fact that it is only a transitional framework, it has also turned into a platform for pursuing the same old conflicts of interests of Nile riparians. Our analysis showed that at the time when the NBI had seemingly resolved conflicts between the Nile riparians, it has also led to new interest conflicts; particularly in that it has led to East African grumbling about the unfair “exclusion” from sharing Nile waters. This very grumbling, apparently, allows the Sudan to pursue its plans of water augmentation more aptly. Being the heart of the Nile system, Sudan’s domestic policies cannot but be linked to the international policies, to be adopted by the Nile Basin riparian states.

This study suggested four development priorities for Sudan in its pursuit of adequate water supply. First is the adoption and carrying out of pluralistic rural development with the goal in mind of regaining the rainwater and, ultimately, achieving food security, environmental protection, rehabilitation, and resettlement. This priority should target the generation of structurally induced relative water abundance (SIRWA) and essentially would mean rehabilitating the desert zones and similar niches that may contribute to the national water budgets of the

Nile riparians by augmenting water supply or efficiently harvesting “green water”. Secondly, the Sudan needs to work towards political stability and achieving communal participation in the management of natural resources. This necessitates participation and democratisation as well as deconstructing existing institutions. Stability in Sudan and the Nile Basin, is crucial for developing the swamp waters as well as for facilitating the inter-basin regional alternative for transferring water. Thirdly, Sudan must seek increasing water supply for agricultural development through development of the swamps and with other co-riparians through efficient irrigation methods, regaining the Nile delta, storing water in the Ethiopian highlands for regaining large amounts of water lost to evaporation, development of the swamps, and considering the inter-basin (regional) alternative water supply. Finally, the Sudan must enhance the internal “virtual water” exchanges for overcoming causes of displacement as well as enhance external “virtual water” exchanges for overcoming recurrent bottlenecks, achieving mutual dependency and progressive integration. Besides these priorities, the Sudan must be the link and push for adoption of long-run strategies that would guarantee sustaining the system. In this respect, riparians should build shared infrastructure and facilitate free movement of Nile Basin population.

Essential to the success of these development priorities in the Sudan is a critical re-evaluation of its relations with its co-riparians. A clear gap in the literature is lack of critical evaluation to the state-centric strive to achieve the “unity of the Nile Valley” although probably this forceful strive to achieve unity has blinded basin-wide development priorities, harmed cooperation between Nile countries a great deal and literally made unity rather impossible. A new frontier for future research, in our view, is the role of non-state actors in bridging relations among peoples of the Nile riparians through redefining the potential and methods for cooperation. How such a role may break hydro-sovereignty and open new avenues such as establishing an industrial zone in the downstream and preserving more water for the agricultural zones in the upstream is an interesting theme for research. The state driven “unity of the Nile Valley” has disguised the true potential of diverse communities and watersheds in the Nile Basin riparians and therefore caused the loss of great opportunities for Nile Basin states and communities.

One of the greatest lost opportunities caused by the state-centric approach is failure to consider the optimisation of agricultural potential between Nile riparians, especially among the three major contestants, with the goal of securing a sustainable management regime of the Nile, namely through shared infrastructure and allowing for labour and capital movement. Agricultural cooperation through efficient irrigation should have taken place between the Sudan and Egypt, for instance, for considering the development of the Northern Region in the Sudan, through involvement of large numbers of Egyptian workers as well as Egyptian capital. This is certainly a better option economically than development through land reclamation in Egypt. Similarly, between the Sudan and Ethiopia cooperation could be achieved by optimising and expanding the existing infra-

structure in the rainfed border zone, which could involve large numbers of workers from both countries but particularly from Ethiopia. Instead, governments of Egypt and Sudan have engaged in senseless projects for unity of the Nile Valley, which after more than half a century, resulted in almost nothing sustainable. We showed that instead of developing the region between them, Egypt and the Sudan actually devastated it, dislocated Nubian communities and literally depopulated the territory. While they had always been frustrating for Sudan and Egypt, projects for the “Unity of the Nile Valley” actually blinded the Sudan and Ethiopia from pursuing proper cooperation avenues. This is because the “Unity of the Nile Valley” was primarily driven by the concerns of augmenting water supply, which as a corollary, mystified several other advantageous forms of interactions among Nile riparians.

The “Unity of the Nile Valley” was so because it was state-centred; because it embodied the authoritarian interests of groups dominating the state, and therefore failed to *recognise* and appeal to a diverse body of ethnic groups. Imposition of a homogenising ideology of unity was possible only if communities of the upstream were decisively defeated in the war of capturing their resources and assimilating them culturally. Military defeat and cultural assimilation of these communities, however, proved to be too difficult a task to achieve throughout the last 180 years; even an impossible task on demographic, cultural, and military grounds. In fact, the processes of afflicting “southerners” with military defeat and cultural assimilation by “northerners” generated obstinate resistance, and “General Forest” seems smart enough to permanently out-manoeuvre the traps of the “Desert Strategists” and to hit back solidly. Above all, a *moralpolitik* involving an appeal to “rights”, “pluralistic development”, and protecting the environmental commons leaves little or no place for twentieth century *realpolitik*. Most importantly, because of its utter destruction, the abode of augmenting water supply, i.e. southern Sudan, now needs the water for its own rehabilitation.

The ideology of the unity of the Nile Valley also took for granted that both Egypt and Sudan were keen for it and no one, actually, questioned whether it was used by both governments for political manoeuvres, not for the benefit of the people of the two countries. Worth noting here is that politically, any critique of the “Unity of the Nile Valley” brought risks to those who uttered it under dictatorial regulations in both countries. However, an honest evaluation of the whole exercise may show that the “process” of “Unity of the Nile Valley” created more harm to relations between these two countries than gains. Imposing this constructed ideology on Sudanese who do not see the importance attached to unity or who look suspiciously upon any relationship between Egypt and ruling juntas in the Sudan created deep resentment. To many, the “Unity of the Nile Valley” was a justification for supporting cruel dictatorships in the Sudan, which often did not mind the blood of their citizens to remain in power. Egypt may have used the carrot of the “Unity of the Nile Valley” to seduce opportunist dictators in the Sudan whenever it felt they were in dire need, such as seeking to crack down on opposi-

tion and suppress civil demands or seeking international recognition. In this respect, Egypt may appear accused of primarily being interested in destabilising the Sudan through the morally acceptable call for unity. Egypt may in that sense appear uninterested in true unity with the Sudan.

In the 1990s, Egypt's strive for unity with the Sudan lessened, or was even abandoned altogether. This was due to two realistic current factors, though they may apply historically. Firstly, during the 1990s, the Sudan became a nest of fanatics, whose political ideology has long been the source of a painful headache for the Egyptian government and society. Secondly, political culture and political socialisation in the Sudan are completely different from those of Egypt and annexing the Sudan to Egypt would trouble the latter a great deal both in terms of resistance to imposed annexation and in terms of bringing into Egypt a different political culture, a "pastoral democracy" that could shake Egypt's well-established technologies of maintaining societal obedience. On the Sudan side, the 1990s showed that unity had become more distant and complicated to achieve. Egypt's invasion and occupation of the Halayib triangle in 1992, peaking in clashes in which Sudanese soldiers were killed in 1995, signalled a new precedence, which made the hosting of large numbers of Egyptians in the Sudan risky for Sudanese national security. Moreover, the hyper-politicisation of the resource issue hardly allowed for expropriating lands of Sudanese communities and allocating them for the sake of resettlement or investment by the Egyptians. In this regard, we noted the discourse of the resistance, especially manifest in the KLM position towards both the Sudanese government and towards Egypt.

The above analysis opens windows for more questions that need to be carried on in future research. For instance, what is the extent population displacement causes socio-cultural displacement and what is the extent this may endorse or undermine the concern about sustainability. What is the extent such socio-cultural displacement define resource accessibility is also an important question that needs to be addressed.

Could the adoption of an "alternative" strategy of recognising the rights of communities to their resources and eliminating causes of communal resentment in the Sudan pave the ground for economic integration between the Sudan and Egypt? What is the extent that the very population concentration in the arid RZ generate new momentum for integration? The recent rapid peopling of the arid RZ and its expected continuation in the future by Sudanese from different regions, has literally meant the fortification of the banks of the Nile by large numbers of Sudanese nationals against a possible invasion from Egypt. Sudan may feel more secure due to this demographic weight, as the two invasions from Egypt in 1820 and 1896 were primarily successful due to the thin population distribution in the harsh region of northern Sudan. In both events, unlike this region, the densely-populated hinterland took decades to subdue and, most importantly, it was mobilisation of groups largely from these hinterlands that ultimately trampled the Khedive Empire in 1885.

Another important area, at the international level in the Nile basin that needs to be studied is the conflict resulting from the very NBI process. Scientific studies on conflicts that may arise among Nile riparians and communities because of the NBI and implementation of its projects as well as studies on the role of civil society organisations in contributing to sustainable development in the Nile riparians and sustaining the benefits from the NBI are still lacking. Another important area which needs to be studied by researchers on Nile hydro-politics is whether the NBI process will evolve into a regional environmental governance structure that strictly binds states to respect sustainable development principles. From within this frame it would be interesting, however, to see how *domestic* dynamics in the Sudan will initiate international forms of pressure that make this country revise its approach to its own national resources. In other words, Sudan through changing the rules of the game in the Nile Basin is actually contributing to create new institutions, new rules which it might not have deliberated before. These institutions will force the Sudan to fall into line with the all-basin arrangements. In other words the Sudan must now comply with sustainability principles not because they represent established norms in its national politics, but because it has to comply with the new regime generated by the NBI process.

### **12.5 Making sense of population concentration: Rationalising relations among riparians**

Population increase in relation to Nile water is particularly demonised as the cause of increasing demand for water, therefore, of conflicts. Population concentration could undergo the same demonisation. In the literature on the Nile there is hardly any study about whether population could be a factor in bringing riparians together. In this section, aided with our analysis in this study, we suggest that population concentration, though an outcome of a crisis and may cause conflicts because of increasing demand for water, could be optimised to rationalise relations among the major three Nile riparians. There is a potential in this population concentration that riparian states may consider for making positive changes and this could be a vibrant area for future research. This is particularly important with regard to the three most prominent riparians.

Sudan has populations moving towards its frontiers with both prominent riparians. Population concentration in the Sudan represents a major change in the sense that it heralds a historic shift in population distribution, which for the first time in millennia showed a reversed tide towards the downstream RZ, particularly the regions between central Sudan and the border with Egypt and the border between the Sudan and Ethiopia. In short, the population redistribution trends are bridging the gaps, settlement-wise, between the Sudan and both prominent riparians sandwiching it. Geopolitically, this shift may trigger changes in the whole of East and Northern Africa. It demographically changes the whole corridor between Khartoum and Aswan (Egypt) and between Khartoum and Asosa

(Ethiopia), which were historically sparsely populated. It has also affected chances of military victory and defeat at times of wars between these countries as well as frequency of trade exchanges and benefits in times of peace. Where dispersed population in the past helped swift movement of troops, now and in the future, the facts of population concentration may erect hurdles and make military adventures more costly. Alternatively, population concentration along the mentioned corridors may make cooperation more worthy – viewed within “geo-economic” modalities it may change relations among Nile riparians dramatically. In the section between central Sudan and the Egyptian border, we witness today for the first time, at least in more than a century and a half, a high rate of population concentration along the river banks. The centralisation of political power and concentration of economic development in the central RZ, combined with aggressive resource capture, has brought hundreds of thousands, even millions, of immigrants into the downstream RZ and, thus, has operated as a tool to shake the cultural hegemony established by the riverain elite. If prospects for economic prosperity come true, the region that historically maintained cultural and ethnic homogeneity may invite, today and in the future, increasing numbers of western Sudanese, southern Sudanese, Egyptians, Eritreans, Ethiopians, and probably, Jordanians and Palestinians. The bridge to Africa as such will widen; however, with an immense movement towards the more prosperous regions on the coast of the Mediterranean.

Similarly, as our analysis in Chapters 8 and Chapter 9 and elsewhere (El Zain, forthcoming (a), (b)) showed, for the first time in known history, we are witnessing a concentration of population along the banks of the Blue Nile and its tributaries in both Ethiopia and the Sudan, but especially in the former. The almost uninhabited region between these two countries now has the highest rate of population increase, with intersecting regional and groups’ interests, flourishing infrastructure, and border trade. In the Sudan, this population bridging started to take place in the early 1920s. Our investigation of population trends in Chapter 6 revealed that the Blue Nile Province and the adjacent Kassala Province, the latter partly drained by the Atbara River, increased their population in the period between 1922 and 1948 by 160 and 266 per cent, respectively, while the national average increase was only 28 per cent for the same timespan. Both regions continued to increase dramatically thereafter. On the Ethiopian side, as noted in Chapter 9, the population bridging started only in the early 1970s, and the regions dominated by the Blue Nile and the Atbara systems (Gojjam, Gonder, and Wellega) have increased their population steadily since then. The current population of the midstream and downstream Blue Nile (in Ethiopia and the Sudan, respectively) is probably greater than 30 million; by 2025 this same range of the river may have about 80 million inhabitants, when the total population of the two countries will exceed 190 million. In other words, the Blue Nile Basin alone will have more population than the total current population of Egypt. For the first time in known history the wilderness of the region seems challenged and is inviting

more ventures that might tame it completely. State-owned corporations, agribusiness, and agricultural labour, driven by pressures of food insecurity, finding productive niches, as well as incentives of lucrative gains, are challenging the Tsetse flies, malaria mosquitoes, *shifita*, and wild animals which infest the region. This not only affects relations among states. The associated agricultural momentum may encourage large investments and lead to sizable water consumption. That last may lead to conflict or, otherwise, accelerate prosperity given the engagement of countries in water-use efficiency measures and genuine hydro-solidarity. Actually, the resource-rich zone between the Sudan and Ethiopia reflects the larger dynamics in the Nile Basin, which in the past took the form of conflict and only lately turned into a form of cooperation. This area represents yet another fresh frontier for research.

This study noted that, at the start of the 1990s, relations among the three major Nile contestants became tenser. However, by the end of the same decade things turned quite positive, with a cooperative framework in the form of the NBI being set on the rails. While state interests increasingly entered a new cycle of conflict within the NBI transitional frame, it seems that, in the long run, causes of tension and consequent threats could be overcome given that riparians could enhance their social resource abundance and social adaptability. To achieve this, Nile riparians should realise their agricultural potential, as all of them are primarily dependent on agriculture. The necessary condition for achieving this without generating stark water scarcity and, therefore, conflicts, is to establish a regime of integrated water resource management (IWRM) within a framework of good neighbourliness and planning ahead for progressive integration through fostering projects of mutual advantage and interdependence. This should be within an active “trade domain”, however, essentially by paying greater attention to the “natural domain”, necessarily through realising the riparians economic potential which should percolate into regional and local prosperity. In fact, it is by realising agricultural potential with the goal of enhancing social resources that the Sudan can establish good neighbourliness and possibly use water resources with other riparians in a sustainable manner. By realising its agricultural potential, the Sudan could become a more genuine partner to Egypt and Ethiopia, not only through preferential terms in cereals trade, but also as consumer of these neighbours’ products and employer for their large agricultural labour; even host of a significant portion of their extra population in the far future. Failure of the Sudan to achieve social resource abundance may cause instability, particularly in Egypt and Ethiopia through large population migrations. Egypt, which was for centuries buffered by the harsh desert, is likely to be a major migration destination, especially now that increasing numbers of Sudanese are resettling nearer its border, which may add to Egypt’s refugee numbers. Ethiopia may suffer further environmental collapse should large numbers of Sudanese refugees penetrate its western frontier.

## 12.6 Some policy recommendations: Regaining the rains and generating SIRWA

There are three structural changes which we believe are deconstructing the frontier-cast ideology, which had been one of the main factors behind environmental degradation and the disturbance of the “blue water”/“green water” partition, which accelerated conflicts and ultimately contributed to mass population displacement/settlement in the downstream RZ. These three structural changes may, therefore, help figure out and pave the ground for a new regime of resource distribution in the vast regions of the NRZ and therefore help regain the rains in these regions and establish for stability that allows for a better water augmentation in the upstream RZ. In short, they facilitate the implementation of the development priorities we suggested in Chapter 11. The first of these structural changes is the collapse of nomadism – the spearhead for the state’s territorial expansion and for subduing disobedient groups and recently the cause of numerous localised conflicts between meso-coalitions. This collapse, resulted, as our analysis showed, from the very conditions created by the “frontier-cast ideology”, manifest primarily in the diminution of pasturelands and abuse of natural resources, leading to devastating environmental deterioration. The collapse of the nomadic mode of production, as the most resilient mode of living, is manifest in the increasing resorting of nomadic groups to cities and villages for settlement, which in some cases involved whole tribes. Arguably, the arid and semi-arid regions that have a larger proportion of their population as nomads, namely the NRZ regions, are likely to witness higher rates of urbanisation with the nomadic stock contributing significantly. We have detailed on how, at the national level, not only in terms of relative size but also in absolute numbers the nomad population of Sudan fell dramatically.

The wars in which nomadic tribes engaged, which in recent years involved them in macro-coalition with the state, have, in fact, accelerated the collapse of nomadism in several parts of the Sudan, where groups are quitting the pastoral sector altogether for settling in nearby villages but most importantly migrating to distant towns in the downstream RZ. This is primarily because of the grave insecurity conditions these wars had created. With the collapse of nomadism, the political capital for an ethnic/religious state in the Sudan, primarily in its wars against citizens of its peripheral NRZ and upstream RZ with the aim of looting their resources, has thus practically rendered obsolete.

The second structural change is manifest in the discrediting of the universalistic (monolithic) discourse, which historically helped maintain the hegemony of the riverain ruling elite since the Turkish rule. In our view, this discourse is being discredited because the riverain elite, especially during the reign of the NIF, had ideologically antagonised, beyond control and had fatally broken down, the circles, which in the past they used to maintain their political hegemony. The launching of indiscriminate war against Muslim African Sudanese (the third

circle) had practically put them on the side of the demonised non-Muslim African Sudanese (the fourth circle). Even (some) Arab Sudanese (the second circle) have now saw in the ruling elite mere resource looters and they, therefore, tied their cause to the fourth and third circles in their armed fight against the ruling elite – they are reinstalling the Sudan in the Sudanic belt once again.

Related to the discrediting of the “universalistic” discourse of the elite is that the mass population displacement caused by environmental degradation and civil wars, both caused originally by the overwhelming resource capture, has changed the population map at the heart of the political system so dramatically. The central RZ, especially Khartoum State, now is as diverse as it has never been, giving chance to different Sudanese communities, including Arab Sudanese, to evolve together again. Importantly, this new diversity at the heart of the political system may bring about a new rationale – a balance of demographic weights, so to speak – that discredits the majoritarian ethnicist discourse of the ruling elite, which historically from Khartoum had insisted on imposing a monolithic Arab/Islamic culture over a multicultural milieu, therefore, caused chronic injustice and wars.

The third structural change is manifest in the emergence of serious political movements and a confident leadership among marginalized groups of the upstream RZ and the NRZ, advocating a robust socio-political programme for a modern state. While this leadership is engaging in effective definition-making and setting its terms of negotiations, it is also paying greater attention to addressing almost every aspect of peoples’ lives. This is manifest in the strictly detailed deals such as the Comprehensive Peace Agreement (CPA) these movements reached or may reach with the ruling elite, where the latter is viewed by them as representing a cunning group, which can always mischievously manipulate the texts of agreements let alone barely respect any of such agreements. The CPA which the SPLM signed with the Islamist faction of the ruling elite had addressed a multitude of issues in minute details.

To these three structural conditions, a fourth one, the recent extraction of oil, could be added. Its major contribution could be scene in supporting and digging the country’s agricultural potential. This is particularly relevant to southern Sudan, which is rich in water resources and as well in the newly extracted resource. Oil can be crucial for making the strategy of supplemental irrigation materialise.

The above conditions may allow for recommending some policies/strategies, primarily, for achieving stability in the NRZ and upstream RZ. Six such policies/strategies are suggested here.

Firstly, given that the micro- and meso-coalitions’ conflicts had primarily stemmed from large-scale land capture and abuse by the state and state-backed groups, it is crucial to any sustainable resource management in the Sudan that may help among others to establish a sound hydrosolidarity between the RZ and the NRZ that a land reform is carried out. This land reform should recognize in specific terms the historical rights of communities to their lands and subterranean natural resources. The process agreed upon and instituted in the CPA, i.e. of pro-

gressively developing and amending the relevant laws to incorporate customary laws and practices, local heritage and international trends and practices should be strictly pursued. The national land commission which assigned with arbitrating between willing contending parties should strictly abide by laws customary to localities emphasising the principle of equity. While this should apply to localities in all regions where resource looting prevailed for decades, need for a national land reform that specifically recognizes the rights to resources remain unavoidable.

Secondly, equitable development and political participation are crucial for better management of resources pertaining to the balancing of water partition. They are also crucial to lessening conflicts over resources, which had been behind the loss of “green water”. Both similarly represent practical ways of deconstructing the “frontier-cast ideology” and lessening the stark difficulty resulting from structural inequalities. Unequal development, resulting from the biased allocation of central government development funds or grants essentially stems from overlooking the potential of specific sectors, particularly the pastoralist sector in the NRZ and upstream RZ regions – the regions which were trapped in chronic conflicts and stark environmental degradation. There is need to recognise and critically overcome the influence of the “cotton ideology”, which largely disguised the potential of the pastoral rain-fed sector while propagating that of the irrigated sector in central and northern Sudan. This ideology redefined the worth of resources in the Sudan – which should be conserved or financially subsidised and, therefore, which communities benefit from state amenities and which do not.

Equitable development and political participation are crucial for overcoming the condition of poverty, which was generated by the centre’s ill-planned authoritarian development policies and became the yardstick for allocating government funds and investment. There is need to view resources in the Sudan from a historical perspective, because the latter allows us to see the *impoverishment* inflicted by the downstream RZ on the NRZ and upstream RZ as the cause of their current stark *poverty*. Accordingly, the currently perceived eternal poverty of the NRZ and the upstream RZ should be falsified and, instead, these regions should be viewed as potentially rich, developable and that they could be rehabilitated and could be made to meet the needs of their original inhabitants. Economic marginalisation of the NRZ and upstream RZ communities is a “natural” consequence of the ideological conceptualisation of resources and resource value on the one hand and the resultant political marginalisation on the other hand. The condition for recognising the existence and value of resources outside the central growth area (i.e. the central RZ) implies the release of the political impetus and ending the exclusion of pastoralist and agro-pastoralist communities that had originally began due to the building of the power bloc of the farmers’ community.

Thirdly, there is need to effect a genuine decentralisation, which is crucial as a framework for any effective economic development and political participation, especially if the latter will benefit from the rich NRZ and upstream RZ localised

indigenous institutions. The latter, at the bottom of the administrative system, may be more efficient in resolving resource conflicts and deciding accessibility and recognising the carrying capacity of the locality. It is at the localised level that consultation for land reforms and how to regain the rains should take place.

Fourthly, there is need for gathering more information, involving local communities, to help design a well-informed strategy by local authorities in the NRZ and upstream RZ for establishing harmony between the mobility needs of nomadic communities and the farm safety needs of settled communities. Importantly, however, there is need to deconstruct the tribal war epics through civic education and civic engagement – a role essentially necessitates the active involvement of traditional and civil society organisations (CSOs) and, most importantly, strengthening these organisations to play it efficiently. At the national level, CSOs should push for a strategy that decrease nomadic tribes' vulnerability to the cunning mobilisation by speculators. This could best be pursued through creating "land and water parliaments". The strategy we suggest here is one of rural development through small-scale supplemental irrigation in the NRZ drylands with the primary purpose of rehabilitating the localised ecosystems and encouraging the nomadic communities to irrigate farms with the aim of increasing crop productivity as well as producing fodder for their herds.

Small-scale supplemental irrigation, through increasing the productivity for staple food crops and fodder for animals in the locality, may help achieve greater degree of resettlement of nomadic tribes, or, at least, decrease the mobility of herds, therefore, the potential conflicts associated with passages, etc. It may help achieve a degree of forestation, especially through planting fodder trees, therefore, ultimately contributing to efforts aimed at preventing environmental degradation in the NRZ. The best policy, in our view, that would achieve resettlement and lessen environmental problems in the NRZ localities, is one of enhancing the rural water supply with the goal of its decentralisation: increasing the number of water stations in order to decrease herd concentration. In other words, sound rural water provision policy should have increased the number of facilities in an accelerated manner in parallel to increases in population and the herd with the aim of covering thousands of villages in rural areas, so as to provide, additionally, for supplemental irrigation.

In the wetlands in the upstream RZ, a rural development strategy should involve local communities in the definition-making and decision-making processes with the ultimate goal of benefiting these local communities and catering for a balanced "blue water"/"green water" partition. Thus, instead of draining a large segment of the swamps through the gigantic Jonglei Canal there is need for an alternative channelling, namely viewing the possibility of several smaller canals and dividing the area to be drained into hundreds, even thousands of niches with the aim of preserving the integrity of the ecosystem as a whole. In some areas there is no need to drain the water as it is possible to cultivate different types of food alternatives (e.g. rice and fish) so humans benefit as well as other species.

In the initial stages, implementing supplemental irrigation projects and the alternative channelling of the swamps waters might be very costly and therefore discouraging. Economists are ready to argue against such an option due to the huge amounts of money it would entail. Calculations, however, should consider the social and ecological costs, not the economic costs alone.

Fifthly, a conflict-and-conflict resolution-informed government grants' allocation for rural development should be adopted with a clear commitment to transforming the resource conflict in the currently unstable NRZ and upstream RZ regions and ensuring peace building. Given that the cost of tribal and civil wars is immense compared to any amounts allocated to NRZ and upstream RZ regional development, there is need for a government grants policy that should consider first and foremost (a) the degree of ethnic polarization and impact of civil war, tribal feuds over natural resources, and/or armed banditry in the region; (b) whether the dominant economic sector is pastoralism; (c) degree and range of spatial mobility of communities in the region; and (d) the degree of environmental degradation. These criteria must be given priority over the conventional development criteria, which were previously used to allocate government grants, including (a) the degree of relative backwardness; (b) population size; (c) measure of tax effort; (d) special location and social characteristics; (e) commitment to major national schemes (contribution to GDP); and (f) habitable area (Chapter 3). These latter criteria, in fact, had not been sensitive to urgent situations and therefore aggravated the resentment of communities in different regions. Additionally, they caused bias to the downstream RZ regions to the disadvantage of the NRZ and upstream RZ regions. In fact, these criteria had caused regions with larger herds, therefore, with relatively higher productivity of "virtual water" to be disadvantaged, receiving less development funds (Chapter 3), which ultimately affected the sustainability and benefit from the "green water".

Finally, complementary to the above is the need for a social and environmental conscientization. This implies the development of a curriculum for environmental education for different school levels, which should essentially deconstruct the prevailing concept of the "open frontier", bring on board the issues of indigenous/traditional resource management, and reinvent localised institutions for conflict resolution and peace building especially in the NRZ and upstream RZ. This should be accompanied by dissemination of knowledge about resource-based conflicts and alternative ways of overcoming such conflicts. Target should not be the localised administration only but also civil society organisations and community-based organisations for a more effective civic education. Synergies between indigenous and modern knowledge about land and water resources guided by the principles of hydrosolidarity between the downstream RZ on the one hand and the NRZ and upstream RZ on the other hand may allow for a more effective adaptation to water scarcity, even generate water abundance.



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