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The *Social Science and Policy Bulletin* is published quarterly by the School of Humanities, Social Sciences and Law at LUMS. It provides a forum for debate on the economic and socio-political issues pertaining to the formulation and conduct of public policy as well as its impact. The Bulletin aims to disseminate, to a wider audience, high quality research and policy-oriented work being done by social scientists. The editors of the Bulletin welcome short essays, either analytical or quantitative, that are relevant as well as intellectually stimulating.

In this Issue

Editors' Note

This issue of Social Science and Policy Bulletin presents a range of economic and human development related issues which the government is facing and that need to be addressed at the earliest to mitigate their adverse consequences. This bulletin comes at a time when political change is underway in Pakistan and we hope that the issues and problems discussed herein as well as policies advised through these papers will prove noteworthy for the forthcoming government.

Despite having a thriving growth rate, the improved average income levels has not translated into higher levels of well-being for the population. Women in particular still remain a marginalized workforce often appointed on low-paid jobs without any benefits or formal contracts. Even aside from issues of gender inequality and discrimination, the country as well as the region overall is facing environmental threats whose biggest fallout will be the more vulnerable segments of the population - the poor and women.

The article by Nazam Maqbool titled "Mahbub-ul-Haq's Vision of Human Development in Pakistan: Challenges and Policy Options" draws on the model of human development designed by Dr Mahbub-ul-Haq. The piece highlights that there is no automatic link between improved income and human welfare unless deliberate governmental policies ensure the latter. Given that Pakistan is facing a number of challenges in advancing human development, Maqbool suggests that human development could be ensured by introducing land reforms which equitably divide productive assets and capital; credit schemes to provide finance on indiscriminate basis; investment in education, healthcare, nutrition and family planning; development of a new social contract with the poor so as to improve their capability; women empowerment through access to better education and healthcare and recognition of their contribution to the economy; and political commitment to improving governance structures among other things.

The next article also by Nazam Maqbool titled "Climate Change, Water and Human Migration in South Asia: A case of India and Pakistan" focuses on climate change which makes South Asia highly vulnerable to climate-related disasters. South Asia is already facing water shortages in part due to rapid population growth and urbanization, and climate change would only increase the pressure on water resources. Maqbool emphasizes that with India and Pakistan being the largest economies in the region, they need to initiate efforts for mitigating the effects of climate change. However, this goal can only be achieved trhough a coordinated regional level effort that involves other countries as well.

The final article is by Karin Astrid Siegmann and Hadia Majid titled "CPEC – game changer or game over for women's empowerment". The authors argue that the collaborative investment by China and Pakistan will likely not result in well-paid jobs for women unless the proposed plans are critically examined and revamped though a gender lens. Drawing on working women's experience under the previous SEZs in both China and Pakistan, they emphasize that CPEC would only prove beneficial to women if gender equality is ensured and labour laws are enforced for the protection of female workers.

The Revealing Facts Page provides a comparison of human development indicators in the South Asian region where the numbers have been improving

but at a sluggish pace. Although, population growth rates have fallen which might help in relieving the pressure on resources in the region, and literacy rates have improved, Pakistan lags behind. Clearly, if Pakistan wishes to develop rapidly and in a sustainable manner, the country would need to implement strong policies to improve several aspects of human welfare simultaneously.

Mahbub-ul-Haq's Vision of Human Development in Pakistan: Challenges and Policy Options

by Nazam Maqbool

Abstract: *The model of human development, as developed by late Dr Mahbub-ul-Haq, established a direct link between economic growth and actual daily lives of people. This model postulated that there is no automatic link between improving income and promoting human welfare, rather it needs to be established by deliberate governmental policies: such as social sector public spending, and fiscal policies for a more equitable distribution of income. Sadly, for Pakistan, such forward-looking public policies have been lacking for decades. The consequence is worsening economic and human development outcomes as indicated by low growth, poverty and human deprivation. Currently, the country is facing a number of challenges in advancing human development. Pakistan has to increase its GDP growth in a way to improve the well-being of all of its people without any discrimination. Based on Dr. Haq's work, a concrete agenda for action to improve human development in Pakistan is needed.*

The concept of human development model

Human development is development *of, for and by* the people. Human development model regards GDP growth necessary, however pays equal attention to its equitable distribution, its link to people's empowerment, and to equal access to development opportunities now and in the future[1]. A link between economic growth and human well-being needs to be created consciously through conscious public sector policies such as government spending on education, health, nutrition and environmental protection, and fiscal policy for equitable distribution of assets, wealth and income.

"Human development is the most holistic development model today. It covers every development issue including economic growth, social investment, people's empowerment, provision of basic needs and social safety nets, political and cultural freedom and all other aspects of people's lives. No aspect of development model falls outside its scope, but the vantage point is the widening of people's choices and the enrichment of their lives."[2]

No debate is complete today without reference to people-centred, environmentally sound development strategies. The United Nations pre- and post-2015 global development framework in the form of Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs) has been developed on the basis of human development framework and places people-centred development at the core of social and economic development.

The state of human development in Pakistan

In Pakistan, a conscious public policy translating economic growth into people's lives has been missing, leading to the present state of human deprivation in Pakistan.

- ***Human Development Index (HDI):*** Pakistan was ranked 147th out of 188 countries on the HDI in 2015 which was better than Afghanistan only in South Asia. A district level analysis of HDI shows an extremely unequal and divided society. As per 2015 data, most of the districts in Punjab were in high (better and good) level of HDI, although southern Punjab was mostly in medium HDI category. Vast areas of Balochistan

were in low HDI category, making it the most underdeveloped province. The contrast around Khyber Pakhtunkhwa (KPK) is evident, with most of the districts in high medium, medium and low medium level of HDI. Sindh too has contrast, but much more districts in low medium and medium category of HDI (see table 2).

- ***Education:*** In Pakistan, 4 out of every 10 people (58 percent) (aged 10 years and over) were illiterate in 2015-16.[3] The net school enrolment rate varied from 77 percent at primary to 49 percent at middle level to 31 percent at secondary level. Of the enrolled children in grade I, one-third drop out before reaching grade V. In 2016-17, 44.3 percent (or 22.8 million) of children (aged 5 to 16 years) were out of school; 53.2 percent of them were girls.[4]
- ***Health:*** In 2015, Pakistan ranked 160th among 195 countries in healthcare access and quality, better than Afghanistan only in South Asia.[5] Six out of every ten (58 percent) people in Pakistan are food insecure.[6] Globally, Pakistan has the 2nd largest number of stunting children (with 45 percent prevalence rate), 3rd largest number of wasting children (with 11 percent prevalence rate in 2012), and 3rd largest number of anaemic women (52 percent prevalence rate in 2016).[7] In 2015, Pakistan ranked 149th (276 deaths per 100,000 births) out of 179 countries on the Maternal Mortality Ratio Index.[8] Pakistan is one of only three countries in the world with endemic polio alongside Afghanistan and Nigeria in 2018 and the fifth highest with burden of tuberculosis in 2016.[9]
- ***Poverty:*** In Pakistan, 38.8 percent of population was multidimensional poor in 2014-15, with the ratio varying from 31.4 percent in Punjab to 71.2 percent in Balochistan and 73.7 percent in Federally Administered Tribal Areas (FATA). In 2015-16, 24.3 percent of the population was poor under national poverty line criteria.[10] The income inequality, measured by Gini coefficient, rose from 0.35 in 1987-88 to 0.41 in 2013-14.
- ***Women:*** In Pakistan, the female HDI value averages 34.9 percent lower than the male HDI value. The gap is 6.6 percent for the world, 9.5 percent for the developing countries and 21.6 percent for South Asia.[11] Moreover, the country has the lowest female HDI value in South Asia only after Afghanistan. The gender disparity in HDI is explained by gender differences in schooling and income.

Table 2: Number of districts with low, medium and high Human Development Index (HDI) in Pakistan, 2015

	Punjab	Sindh	KPK	Balochistan	Total
High	4	1	0	0	5
High medium	18	1	4	0	23
Medium	11	4	11	1	27
Low medium	3	10	6	1	20
Low	0	7	1	14	22
Very low	0	1	2	12	16
Overall HDI	0.732	0.640	0.628	0.421	0.681

Sources: UNDP, Pakistan 2018.

Challenges of human development in Pakistan

Pakistan is facing a number of challenges in advancing human development and decreasing human deprivation.

Economic growth

Inclusive, sustained and sustainable economic growth along with priorities towards social sector spending is essential for human development. Pakistan needs about 7.5 percent GDP growth rate to absorb the increasing labour force.[12] The annual GDP growth process has been volatile in the country, decreasing from 6.2 percent in 1960-73 to 4.9 percent in 1973-78. It again increased to 6.6 percent in 1977-88 but decreased to 4.9 percent in 1988-93 to 3.14 percent in 1993-98. It again went up to 6.3 percent in 1998-2008 sliding to 2.6 percent in 2008-11, and reviving to 4.5 percent in 2012-18.[13] The situation is explained by low domestic savings ratio as well as sluggish export performance. The failure to raise sufficient revenue is accompanied by the government's inability to reduce expenditure. Expenditures on defence, civil administration and subsidies account for a major share of government expenditure, leaving little for development sector. The country's tax to GDP ratio (12.4 percent in 2016-17) is one of the lowest in the world. The system of taxation suffers from narrow tax base (only 2 million registered tax payers), weak enforcement of taxation rules (tax evasion estimated to 4 percent of GDP), tax exemptions and preferential treatment to selected sectors (amounting to Rs. 800 billion), and poor capacity of provincial governments to collect taxes.[14]

Poverty

According to Dr. Haq, "*like the tale of two cities, Pakistan is a tale of two economies—one embarrassingly rich and the other desperately poor. And the distance between the two economies is widening, not shrinking.*"[15] The rate of reduction in poverty has been slower that the rate of GDP growth in Pakistan mainly due to rising income inequality, sluggish agricultural growth, and anti-poor economic policies.

Poverty is not only pervasive it is also distributed disproportionately across regions and socio-economic groups. Poverty in the country is a rural phenomenon as 74 percent of the poor are from rural areas. These people are either landless or near landless and mostly work as casual agricultural labourers. Women and girls bear the largest burden of poverty, with 3 out of every 4 poor Pakistanis being female. The poor are not only income or capability deprived but are also vulnerable to disease, economic downturns, natural disasters and even violence. Women, children, and the elderly are the most vulnerable.

Employment

With 61 million workers, Pakistan has the world's 9th largest work force, which is largely working in the informal sector (72.6 percent in 2015), with a large gender disparity in labour force participation rate (67.8 for male versus 22.0 percent for female in 2015).[16] High unemployment among the educated workers indicates two disturbing facts: 1) there is a mismatch between the curriculum taught in schools and the skill required for an increasingly globalized labour market; and 2) that the education and training in Pakistan are undervalued by prospective employers. A consequence of unemployment and under-employment of the educated in Pakistan is the brain drain of highly skilled people from the country. For those left behind, the inability to find remunerative and meaningful employment creates a sense of social exclusion.

Education and health

The state of health and education in Pakistan remains dismal. The state's principal concern with guaranteeing territorial security and defense expenditures has always taken primacy over expenditures on education and health. In 2016-17, Pakistan was spending just 0.5 percent of its GDP on healthcare services, which is massively low compared to WHO's minimum benchmark of 6 percent of GDP. In case of education, the country was spending 2.3 percent of GDP which was again lower compared to the required 7 percent of GDP under the National Education Policy 2009.[17] Of the allocated funds, much is wasted through underutilization, mismanagement, corruption and uneven distribution practices. As a result, the country has one of the lowest social sector indicators in South Asia.

Gender inequality

Women in Pakistan are facing a number of challenges ranging from disparities in access to education and health to economic opportunities, political empowerment and violence. Their contribution in economy is barely acknowledged and their access to public services lags behind that of men.

Only one out of every five women in the working age is in the labour force. Three-fourths of them are employed in the farm sector. Of the non-farm female workers, 73.5 percent are working in the informal sector.[18] Women do not own the lands on which they work and therefore cannot afford technological inputs to improve the yield; they also face restricted access to institutional credit, assets and resources.

Militancy

Ever since the birth of the country, Pakistan has undergone numerous cycles of interstate conflicts and intermittent religion/ethnicity based intra-state violence. The post-9/11 period has now unleashed increasingly intense levels of conflicts across all levels—state, community and people. This has resulted in large-scale displacement, loss of assets and livelihoods and severe mental and psychological stress. Between 2001-02 and 2017-18, the direct and indirect costs incurred by Pakistan due to incidents of terrorism amounted to US$ 126.8 billion.[19] The root causes of conflicts and violence in Pakistan can be sought in structural factors that have cumulatively created an environment where accountability has been lost, a culture of tolerance towards violence has been fostered, and interests based on religion, nationalism and ethnicity have superseded the moral imperative to save lives and improve people's well-being.

Environmental deterioration

Pakistan's growth process has been clouded by a degrading environment and growing scarcity of natural resources, exposing the population to serious air, water and land pollution, with negative impact on people's well being. Pakistan is the 7th most vulnerable country in the world to climate change impacts. The country is a 'water scarce' country with per capita water availabilty less than 1,000 cubic metres (2016). It has one of the lowest forestation rate (of 1.9 percent) in the world. The economic cost for poor sanitation alone in Pakistan is four percent of GDP. Air pollution levels are continue to be high with acute and chronic health impacts on people.

Poor governance

Lack of good governance is the main reason for colossal human deprivation in Pakistan. The country is one of the most poorly governed countries in the world, with volatile economic performance, inefficient civil servants, and poor law and order situation. The evidence can be seen

from humane governance index (HGI), developed by Dr Mahbub-ul-Haq and computed by Meghna Desai in late 1990s and revised by MHRC recently. According to latest estimates computed by MHRC, Pakistan ranks 126 out of 136 countries.[20] Although the Constitution of Pakistan (Article 140A) requires each province to "*devolve political, administrative and financial responsibility and authority to the elected representatives of local governments*", but in practice these powers have been partially delegated to the local level for a limited set of functions.

Policy options

As the country's development crisis are rooted in economic, social, political and institutional systems, systemic reforms are needed.

Land reforms, credit to the poor and equitable growth: There is a need for comprehensive land and credit reforms for equitable distribution of productive assets and capital. Land reforms are needed not only to increase the farm productivity by owner cultivators but also to change the political system by empowering the poor peasantry. Such reforms should be based on the principle that the tiller of the soil must become the owner of land. And the cultivator should be supported by agricultural research and extension services, access to markets, inputs and modern irrigation techniques.

Credit schemes should be designed in a way to provide finance to all on equitable basis. There is need to have a special focus on the financial needs of the informal sector as well as the small and medium enterprises. The country can learn from the experience of Japan, East Asian industrializing tigers and China. They improved their economic prosperity on sustainable basis through human development strategies. A firm basis was laid for equitable growth through massive investments in education, women's empowerment and land and credit reforms. "*Indian Punjab has beaten Pakistani Punjab by a wide margin in raising agricultural yields, principally because of meaningful land reforms, widespread education and agricultural research.*"[21]

Massive investments in human development: The government needs to ensure considerable investment in human development over a fairly long period of time and tough decisions on resource allocations. The country should formulate a national human development plan to provide universal primary education, basic healthcare to all, safe drinking water for all, adequate nutrition, and family planning services for the all willing. Pakistan can learn from the experience of East Asia which invested massively in people and technology.

According the Dr. Haq, "*we need to spend a minimum of 10 percent of GNP on the provision of basic services to our people, especially education and health.*"[22] This requires a complete restructuring of the fiscal system which requires reduction of (domestic) debt through the sale of major public assets, and balancing of defence budget with social spending without compromising the legitimate requirements of national security. Since Pakistan's resources are limited, it needs to allocate them efficiently. This implies providing more funds for basic education rather than for higher education, prioritizing primary healthcare over expensive urban hospitals, providing community water taps rather than piped water for the rich.[23] The government must also ensure that money is spend efficiently.

Reducing poverty by creating a new social contract with the poor: The solution for poverty eradication requires not only an increase in the income of the poor but building the capability of the poor. The state has to ensure that the poor have access to primary education, basic healthcare,

clean drinking water, adequate sanitation, and basic shelter. Policies alone will not do, public expenditure have to be re-oriented to emphasize the creation of capacity to deliver these basic needs to the poorest segments of the population. A new social contract needs to be designed "*to tax the rich and transfer economic opportunities to the poor, to provide small loans to the poor for self-employment rather only big loans to the rich, and to provide social services to the poor and not to the privileged class.*"[24] The rich and influential should be taxed to reverse the existing pattern of a perverse transfer of income and economic rents from the poor to the rich.

A social safety net for the poor is the first immediate step for poverty reduction. "*What is needed is a comprehensive and realistic plan to extend universal coverage to basic social services to all the people within a period of 10-15 years, to be financed by progressive taxation of the rich.*"[25] In fact, the poor should get these social services free or with significant subsidies: the rich should pay their full cost or even be charged more to finance subsidies for the poor.

Women: Women's empowerment is inevitable for Pakistan's social and economic development. There is need for an improvement in women's access to quality education and health; recognition of women's economic contribution as well as provision of more jobs and financing; implementation of women related laws and policies; removing of legal and social barriers for women's access to opportunities; and the strengthening of the judicial system to provide justice to women.

Civil society: Civil society needs to be mobilized to improve economic and social development of the country. Pakistan can learn from the successful experience of a number of NGOs and private sector initiatives in other countries of the region as well from within the country. The successful examples include: Bangladesh Rural Advancement Committee (BRAC) and the Grameen Bank's role for micro financing in Bangladesh, Self-Employment Women's Association (SEWA's) role for the rights of informal sector female workers in India, and Bunyad Foundation's contribution for improving literacy among the millions of poor women in Pakistan.

Governance: Institutional reform and strengthening is inevitable for economic development. According to Dr. Haq, "*human and social capital (good governance) is estimated to have contributed as much as 85 percent to the national wealth of Japan.*"[26] A highest level political commitment (along with an effective local level devolution of political, administrative and financial powers) is vital to improve the human condition of Pakistan. The ruling groups have been resisting to introduce meaningful reforms over the last seven decades, such as comprehensive land reforms, provision of credit on merit, farm sector income tax, an efficient tax collection mechanism, civil service reform, and a truly representative democratic system. The government needs to promote competitive market (based on a fair system of privatization), with the state focusing on the provision of social services and selected physical infrastructure.

It is absolutely vital for Pakistan to concretely work toward building peace in the region. Some of the building blocks for this would be increased trade and other economic cooperation between the regional countries; enhanced people-to-people contact and cooperation among civil society organizations. Regional trade still remains hostage to unresolved political issues, despite the fact that the smugglers on both sides are minting money.

More and more people are beginning to realize that to reap the benefits of trade, economic issues must be delinked from political issues.

The paper is drawn on the research work at Mahbub-ul-Haq Research Centre. The author, Nazam Maqbool, is a senior research fellow at Mahbub-ul-Haq Research Centre. He may be reached at nazam.maqbool@lums.edu.pk.

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Notes

[1] Haq 1995.
[2] Ibid.
[3] GOP 2018a.
[4] GOP 2018b.
[5] Lancet 2017.
[6] GOP 2012.
[7] IFPRI 2017.
[8] Save the Children 2015.
[9] WHO 2018.
[10] GOP 2018a.
[11] UNDP 2017.
[12] Hussain 2017.
[13] GOP 2018a.
[14] MHRC 2015.
[15] Haq 1997b.
[16] GOP 2015.
[17] GOP 2018a.
[18] GOP 2015.
[19] GOP 2018a.
[20] MHRC 2012.
[21] Haq 1996.
[22] Haq 1993.
[23] Haq 1995.
[24] Haq1997a.
[25] Haq 1997b.
[26] Haq1997a.

Climate change, water and human migration in South Asia: A case of India and Pakistan

by Nazam Maqbool

Abstract: *Climate change is a daunting reality in South Asia which is one of the most vulnerable regions of the world to climate-related disasters. The impact of climate change, in the form of melting of glaciers, heavy and untimely rainfall, extreme weather events, and sea level rises, on water resources and systems can negatively impact migration patterns in the region. The most vulnerable will be the poor and women migrating within and outside their countries of origin. A coordinated regional level solution can change the fate of the region by changing climate change from a challenge to an opportunity. Such a strategy may include ways to unlock regional renewable energy potential to reduce poverty and increase economic growth. Similarly, common adaptation strategies may be adopted keeping in view the shared eco-systems such as glaciers, rivers, mountains and rains as well as common interest of countries and prevention of conflict.*

Introduction

Climate change—in the form of melting of glaciers, heavy and untimely rainfall, extreme weather events, and sea level rise—is going to impact the upper and lower riparian countries in South Asia. Six out of the eight countries in South Asia share river systems that span national boundaries. Adverse effects are already being seen everywhere as demonstrated by floods, droughts, intense and frequent natural disasters, along with sea level rise. Sustainable Development Goal (SDG) 13 calls for urgent action to combat climate change and its impacts. It also aims to build resilience in responding to climate-related hazards and natural disasters.

South Asia is already facing water shortages due to population growth, rapid urbanization, faster industrialization and poor water management. Climate change will increase stress on water resources in the region by negatively affecting water quantity, quality, and demand, and transboundary water issues. Inter-county disputes could be further increased by more demand for and less supply of water. This can also exacerbate existing development challenges including migration patterns.

The aim here is to address the impact of global warming on water availability and transboundary water management in general. In particular, the analysis looks at the impact of climate change on human migration. The following questions are addressed:

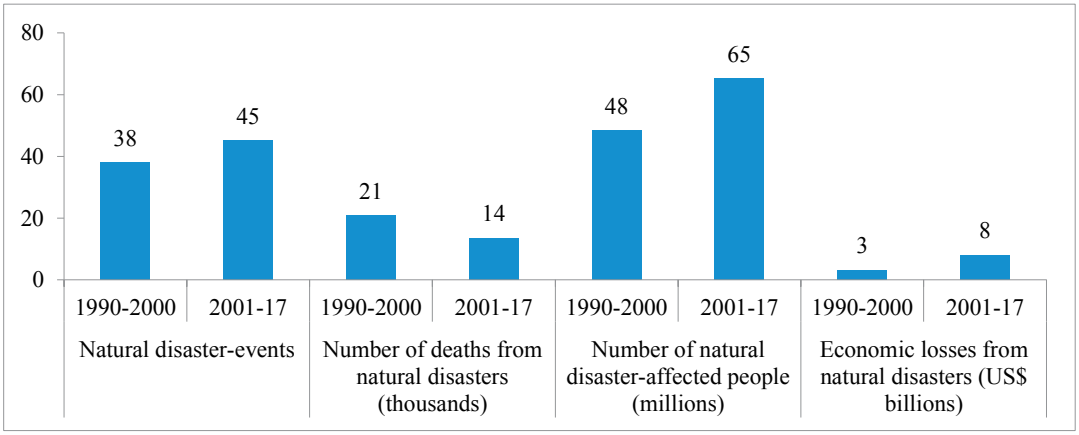
- Why is South Asia vulnerable to climate change?
- How can climate change impact water, particularly water availability and transboundary water management?
- How can climate change affect human migration?
- What are the ways and strategies to ensure economic growth in South Asia in a way to ensure sustainable human development?

South Asia's vulnerability to climate change

South Asia is one of the most vulnerable regions of the world to climate change due to more exposure to natural disasters, high incidence of poverty, high proportion of the population living in urban slum areas, high population density, and more

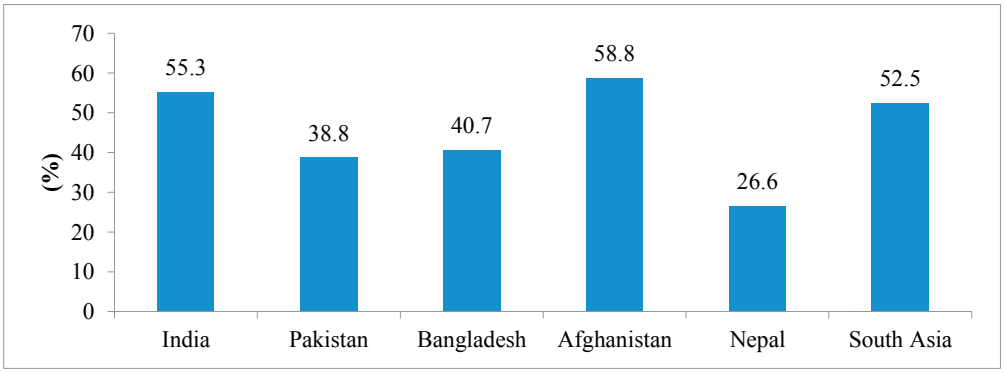
dependence on monsoon rainfall (see figures 1-4). Weak institutional capacity, inadequate water storage facilities, and shortage of finance and technology also exacerbate the issue.

Figure 1: Average annual number of natural disasters in South Asia



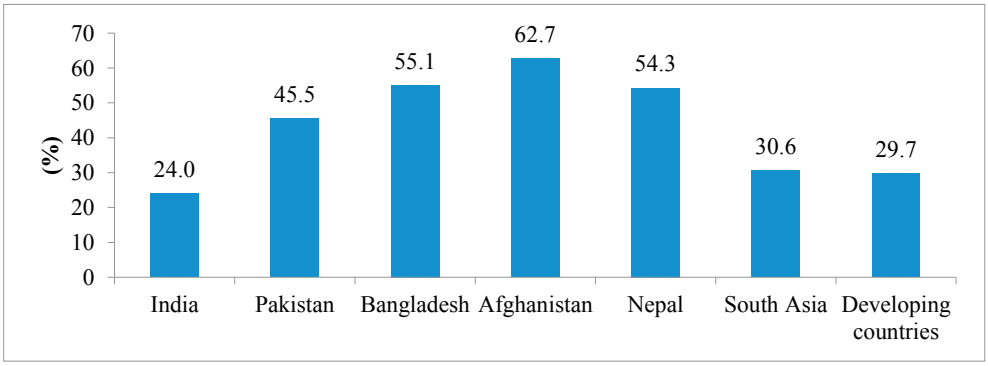
Source: CRED 2018.

Figure 2: Poverty: Population in multidimensional poverty (%), 2005-15



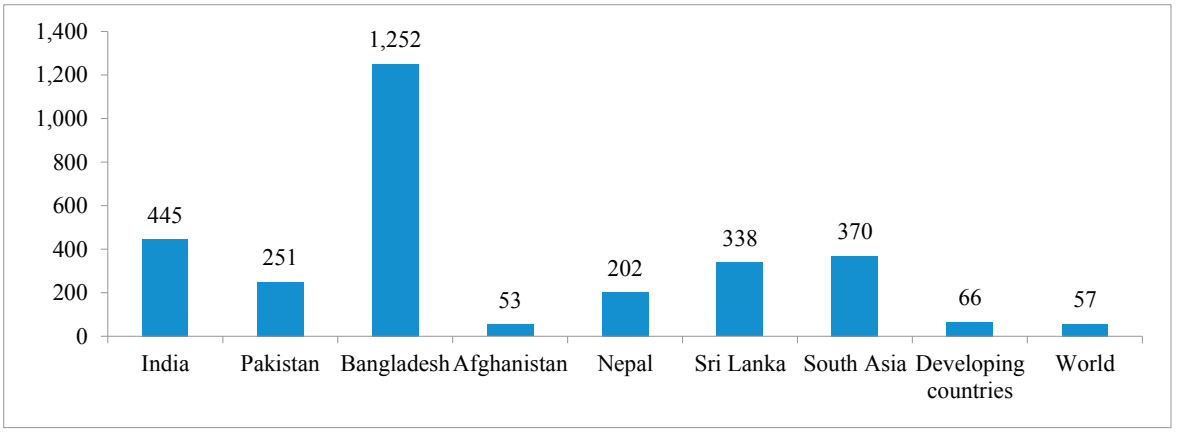
Source: UNDP 2016.

Figure 3: Population living in slums (% of urban population), 2014



Source: World Bank 2018b.

Figure 4 Population density (people per sq. km of land area), 2016



Source: World Bank 2018b.

Main sources of water in South Asia

South Asia, with one-quarter (24 per cent) of global population, accounts for 4.6 percent of global annual renewable water resources.[27] Water supply is seasonal and depends on monsoon rainfall and snow melt in the Himalayan mountain range. About 80 percent of the total annual precipitation in South Asia occurs during the monsoon months, impacting inter-seasonal variation in river flows. For instance, in India the flow distribution of selected rivers in the monsoon period represents 75 to 95 percent of the total annual flow. Similarly, about 85 percent of the annual flow in the Indus in Pakistan occurs in the summer months.[28] The largest three river systems of the Indus, Ganges, and Brahmaputra are partly fed from the snow melt from mountains. Snowmelt accounts for 11 per cent of total renewable water resources in South Asia, with the ratio varying from 10 per cent in India to 57 per cent in Pakistan and zero in Bangladesh and Sri Lanka.[29]

The two largest economies of South Asia, India and Pakistan, are water-stressed countries, with lowest per capita availability in the region. Pakistan's per capita water availability is projected to decrease from current level of 1,000 cubic metres to 550 cubic metres by 2025, while India's from 1,545 cubic metres to 1,340 cubic meters between 2011 and 2025. The situation is explained by growing a deficit between water demand and supply, over pumping of groundwater, excessive use of surface water, inefficient management and pollution of water, and escalating tensions over water.

South Asia has two transboundary river basins which can affect quantity, quality and timing of water flows downstream (see table 1). The Indus river basin has a total area of 1.1 million km2, distributed between Pakistan, India, China and Afghanistan. Similarly, the GBM river basin is distributed between India, China, Nepal, Bangladesh and Bhutan.

The growing scarcity of water resources in the Indus basin calls for increased water cooperation between India and Pakistan, especially in the area of watershed management. The recent cloudburst in Ladakh that caused flashfloods in Gilgit reinforces the need for joint watershed management in the Indus basin system. Impact of climate change on water

Table 1 Shared river basins in South Asia

Basin	Area (km2)	Countries	% of total area of the basin
Ganges-Brahmaputra-Meghna (GBM)	1,712,700	India	64
		China	18
		Nepal	8
		Bangladesh	7
		Bhutan	3
Indus	1,120,000	Pakistan	47
		India	39
		China	8
		Afghanistan	6

Sources: UNDP, Pakistan 2018.

Impact of climate change on water

The impact of climate change, in the form of melting of glaciers, changing precipitation patterns, extreme weather events, and sea level rises on water resources and systems threatens people's well-being in South Asia. Moreover, all of these effects are likely to exacerbate the trans-water boundary issues between India and Pakistan. The region is already experiencing natural disasters such as glacial-lake outburst floods, storm surges, droughts, cyclones and heavy precipitation.

Melting of glaciers: Glacial melt is an important source of freshwater, accounting for 50 per cent of the average flow in the Indus River.[30] The Himalayan glaciers are melting faster than the global average, negatively impacting downstream water availability. Rapid melting of glaciers has already resulted in an increase in the size and number of glacial-melt water lakes and an increase in the threat of glacial lake outburst floods. In the Hindu Kush Himalayan range, about 204 glacial-melt water lakes have been identified as potentially dangerous which can burst at any time.[31] The trend of glacial melt is expected to increase in the future, with serious consequences for water availability. According to the World Bank, in South Asia river flows are expected to increase during the first 50 years of the next century and decrease by 30 to 40 percent during the next 50 years.[32]

Temperature and precipitation: South Asia has observed an increasing annual mean temperature trend during the 20th Century. Seasonal mean rainfall also shows a declining trend with more frequent below normal monsoon rainfalls, and an increase in heavy rainfall events.[33] In the future, climate change is projected to increase temperature and rainfall variability especially during the monsoon season resulting in lesser water availability. Monsoon rainfall in India has decreased by 5 to 8 per cent since 1950.[34] A similar trend has been found in the coastal belt and arid areas of Pakistan with a further projected decrease (of 20 per cent) in most parts of the country by the end of 21st century.[35] The annual mean temperature is projected to increase in India and

Pakistan. This will be accompanied by a decrease in number of annual cool days and cold nights, and an increase in annual hot days and warm nights (table 2).

Table 2 Climate variability in South Asia, 2045-65

	Change in annual temperature degrees (celsius)	Change in annual cool days/cold nights	Change in annual hot days/warm nights
India	1.9 to 2.6	-2.0 / -2.2	4.6 / 13.3
Pakistan	2.4 to 3.4	-1.8 / -1.9	3.4 / 8.1

Sources: World Bank 2012.

Extreme weather events in the form of floods and droughts: The frequency of intense rainfall events has increased in India and Pakistan while the number of rainy days and total annual amount of precipitation has reduced, affecting the quality of water. The 2010 floods in Pakistan affected 20 million people in 78 out of a total of 121 districts, inundating one-fifth of the country's land.[36] The frequency and intensity of droughts has also increased in India and Pakistan due to rising temperatures and decreasing water tables. In India, hydropower decreased by almost 20 percent of its normal generation capacity due to a delayed monsoon in the summer of 2012.[37] The time spent on water collection activities due to drought in Maharashtra state also doubled compared with that during normal rainfall time period.[38]

Sea level rise: The global sea level is rising at an increasing rate with a similar trend in South Asia. The region is more vulnerable due to its long and densely populated coastlines, many low lying islands, and the threat of saltwater intrusion for its agricultural plains and freshwater resources. The sea level can have direct inundation impacts. For instance, it will submerge the Maldives completely in a worst case scenario. In India, one metre rise in sea level will inundate 5,763 square kilometres of land.[39] It can also increase areas of salinization of groundwater. In two islands in India, the thickness of freshwater lenses decreased from 25 metres to 10 metres and from 36 metres to 28 metres respectively, for a sea level rise of 0.1 metre only.[40]

Impact on human migration

Climate change, in the form of melting of glaciers, sea level rise and droughts associated with shrinking water supplies and monsoon variability, is expected to force many people to displace or migrate, affecting both national and international migration patterns. Such movements will have implications not only for displaced people but also for receiving communities.

India, Pakistan and Bangladesh are among the eight countries most at risk to disaster-related displacement.[41] In India, 2.4 million people were displaced by disasters in 2016 which was the highest number in the world after China and the Philippines. According to the World Bank, without concrete climate and development action, by 2050 over 40 million South Asians could be forced to move within their own countries due to climate change, accounting for 1.6 per cent of the region's total population in 2050 compared to 0.2 per cent in 2020.[42] They will move from areas with less water availability and lower crop productivity and from areas affected by rising sea level and storm

surges. Overall, by the end of this century, more than 125 million people in India, Pakistan and Bangladesh are expected to be displaced due to climate change.[43]

Glacial melt will affect major agricultural systems in South Asia. In the short term, there is a risk of floods. However, in the medium to long term there will be shortage of water which will have severe impact on irrigation-fed agriculture, small scale fishing and hydroelectric power generation. Glacial-related water shortage has a significant association with migration from irrigated land areas. These people will migrate either to small and medium sized cities inland or large megacities along the coasts or on the main branches of river systems. A study shows that both sea level rise and inland flood from melting of Himalayan glaciers may cause displacement of up to 20 million people in India and about 26 million in Bangladesh by 2050.[44] The Karachi heat waves of 2015 and 2018 killed many and forced others in Sindh to move during summer. Below-average rainfall in the Tharparkar desert and south-eastern Sindh during the monsoon in 2016 resulted in drought and lower crop production, hence forcing hunger-stricken people to migrate to other areas for food. Similarly, the population near the Indus delta have witnessed large scale migration due to sea-intrusion, coastal floods and rainfalls.[45]

Droughts and floods can destroy both rain-fed and irrigated farming and can increase displacement of poor and marginal rural farmers to urban areas and may even cause urban unrest. In 2013, monsoon floods displaced 1.1 million people in Indian states of Bihar, Kerala, Uttarakhand, Assam, Andhra Pradesh, West Bengal and Uttar Pradesh while Cyclone Phailin also displaced another one million people in coastal areas of Odisha and Andhra Pradesh.[46] Again in 2014-16, monsoon failure affected 330 million people in India.[47] A similar trend has been observed in Pakistan where annual flood events have displaced 11 million people in 2010, 0.3 million in 2011 and 1.9 million in 2012, indicating the vulnerability of the country to floods.[48] In Baluchistan province of Pakistan, the aquifers are dropping by 3.5 meter annually due to repeated droughts and increasing water demand, and are estimated to run out in a couple of decades causing massive internal displacements.[49]

Low-lying coastal cities in South Asia including Karachi, Dhaka, Mumbai, Kolkata, Chennai and whole of the Maldives could be affected by coastal impacts of climate variability and can result in massive displacement of the urban population. An expected 3-5 metre rise in average sea level by the end of 21st century could inundate the coastal cities of the region, resulting in massive displacement of population towards interior cities which are already heavily populated with resource constraints. By 2070, the exposed assets in large port cities of Dhaka and Kolkata may increase by more than 60 fold.[50] India is projected to experience an 80 per cent increase in its population at risk from sea level rise by 2050, with implications for human displacement.[51]

A case of India and Pakistan: Role of Indus Water Treaty (IWT)

The impact of global warming on an increase in water stress has also contributed to an increase in tensions on water-related issues. The IWT is regarded as a successful treaty for cooperation on shared water resources between India and Pakistan. However, it does not address the effects of climate change on water availability. It also does not provide a conclusive solution for water pollution – it addresses it but does not provide for appropriate monitoring and surveillance mechanisms.

Now the question is should India and Pakistan move forward using the existing framework for the IWT, or do they need to go beyond the Treaty's provisions?

The IWT is not as static as some critics contend. Article VII of the Treaty does provide a clause for 'future cooperation' between the two countries for optimizing the potential of the Indus River system. However, very little attention has been paid to areas of cooperation that could potentially fall in the ambit of Article VII - *the joint observation of discharge, seismicity and the potential joint engineering works to augment storage, produce power and better moderate floods.*

Abandoning the IWT in search of a new and more comprehensive framework is hardly the solution. Both countries need to renew their commitment to the letter and spirit of the IWT as a necessary first step. Further, there is a need to strengthen the role of institutions like the Permanent Indus Water Commission to work on resolution of issues such as monitoring water quality, impact of climate change, and better watershed management.

Conclusion and the way forward

India and Pakistan, the two largest economies in the region, should take the first step in cooperating for mitigating and dealing with the effects of climate change. This could involve conducting joint studies on the extent of glacial melt, creating joint mitigation and adaptation techniques and watershed management, timely sharing of information, scientific cooperation and improving flood-forecasting systems.

However, mere bilateral efforts will not suffice. Climate change is not just an Indo-Pak problem but a regional and global threat which requires collective action. Hence, the solution requires greater regional and even global level cooperation.

A coordinated regional level solution can change the fate of the region by changing climate change from a challenge to an opportunity by making the growth process inclusive and sustainable. Since climate change is going to impact water availability and increase transboundary water issues in the whole of the region, there is need to go beyond bilateral solutions towards regional level strategies for best possible use of available water.

A region-wide institution for shared water resources should have mechanisms and processes for:

a. exchange of data and information;

b. help to forge more robust water sharing treaties, especially with respect to hydrological variability and climate change; and

c. be able to address the issue of pollution and promote better flood management

This will help South Asia in holistic river basin management, making water from a source of conflict into a source of cooperation. It will involve all stakeholders in the Indus and the Ganges-Brahmaputra-Meghna basins including Afghanistan and China. China is the largest source of transboundary river flows to much of South Asia. Its plans to harness the immense water resources of the Tibet region are crucial to the hydro-politics of South Asia. Figuring out how to sustainably manage that water will be a key to reducing political conflicts and tensions in the region. India's position will be central to carving out an institutional framework for transboundary water management and hyhdro-diplomacy for basins in South Asia.

A regional level climate change mitigation strategy may include ways to unlock regional renewable energy potential to reduce poverty and increase economic growth. Similarly, common adaptation

strategies may be adopted keeping in view shared eco-systems such as glaciers, rivers, mountains and rains as well as common interest of countries and prevention of conflict. A regional level green fund along with a shared pool of resources for best practices for green growth as well as successful practices for community-based disaster risk reduction and social safety nets can also benefit all. This could also involve conducting joint studies on the extent of glacial melt, creating joint mitigation and adaptation techniques and watershed management, sharing information and improving flood-forecasting systems.

The paper is drawn on the research work at Mahbub-ul-Haq Research Centre. The author, Nazam Maqbool, is a senior research fellow at Mahbub-ul-Haq Research Centre. He may be reached at nazam.maqbool@lums.edu.pk.

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CPEC – game changer or game over for women's empowerment?

by Karin Astrid Siegmann and Hadia Majid

Abstract: *CPEC represents a significant monetary investment for Pakistan, but does the corridor promise women empowerment through well-paid jobs? The special economic zones (SEZs) under CPEC remain remarkably similar to the existing SEZs and export promotion zones which while employing women do so at very low wage rates and virtually no worker benefits. With this precedent, we argue that CPEC will fail to improve women's working conditions unless regular, formal and well-remunerated forms of employment are created.*

Variously termed a 'game changer' or 'game over' for Pakistan's economic development, few observers address whether the 62 billion US dollar heavy China-Pakistan Economic Corridor (CPEC) will contribute to women's empowerment or further exacerbate women's marginalisation in Pakistan. This is a vital question, though, in a country that dangles second-lowest in global rankings of gender equality.

The Planning Commission assumes that CPEC will boost growth and create jobs for women and men alike, yet, it seems unable to provide figures that support this optimism. A flurry of academic research – some of it produced at institutions funded to promote a positive narrative on CPEC – expects projects to create jobs in Pakistan as 'China is losing its comparative advantage of low cost labour'. These studies are silent, however, about who stands a chance to be recruited for such low-waged jobs.

Our own research has brought to the fore that women and men in Pakistan have experienced the dividends of economic growth in very different ways. For instance, during the boom in the services sector after the turn of the millennium, men were favoured over women for employment in banking and telecommunications. In industry, in contrast, lower-paid female workers were hired in the textiles and garment sector. This enabled exporters to prepare for the more competitive global environment after the textile and clothing trade was liberalised in 2004. Thus, employment creation has not always been empowering: casual, poorly or even unpaid employment is likely to reinforce women's marginalised economic and social position.

For a job to contribute to women's empowerment, we argue that regular, formal and well-remunerated forms of employment are of special import. The question is: will CPEC provide such empowering jobs to women workers?

It is mainly the special economic zones (SEZs) planned under CPEC which hold the promise of generating employment that also benefits women workers. The largest chunk of the envisaged CPEC investments goes into the capital-intensive energy sector. Directly, this is unlikely to generate significant employment opportunities. The labourers building the roads and other infrastructure projects under CPEC are likely to be male and their employment temporary. The planned SEZs, however, involve labour-intensive assembly line work, such as in textiles, clothing and toys manufacturing that typically recruit a significant number of female workers. Currently, nine SEZs are planned across the country, with experts expecting this number to quadruple in the future.

However, SEZ jobs' track record in empowering employment is not that impressive. About 60 per cent of all global employment in SEZs is hosted by China. There, especially in light manufacturing, women form the vast majority of the workforce. For a long time, wages in Chinese SEZs were

kept intentionally low to attract foreign investors. Additionally, working 12 to 14 hours per day was common, without labour law protection for the bulk of the (migrant) industrial workforce, or representation by independent trade unions. But with the recent significant wage increases in its Eastern industrial hubs, China is looking West – to Pakistan.

Pakistan's own experience with SEZs does not offer much reason for optimism, either. While labour laws apply to SEZs, this is not the case for the otherwise similar export-processing zones (EPZs) where trade unions and strikes are prohibited. Karachi's EPZ is the oldest one, offering employment to thousands of women. Most of them are young, unmarried, and on temporary appointment without any written contracts – and, hence, fearful of dismissal in case of pregnancy. Productivity is warranted by providing sick leave only at the cost of penalties from workers' salary and strictly regulating visits to the restroom. In fact, most female employment in Pakistan's export-oriented industries is casual, or is informal and home-based where wages are even lower than in formal manufacturing. With an average of about Rs. 5,500 in 2015, women manufacturing workers' monthly earnings can only be called sub-poverty wages. Such jobs may well be the 'comparative advantage of low cost labour supply' that attracts Chinese investment.

Hence, if CPEC's effects mirror the experience of Pakistan's export-led development of the previous decades, then the massive investment is unlikely to contribute to women's empowerment. On the contrary, it will translate into the import of poorly paid and disempowering jobs.

Yet, for women to avail even such or more attractive job opportunities, there is a need to remove the structural barriers that lower women's participation in the labour force. Here, the placement of SEZs throughout the country and not just around major urban hubs as well as the passage of the corridor through rural areas is a welcome feature of the proposed development plans. While the greater connectivity to markets may provide a catalyst for the requisite change in Pakistan's patriarchal social set-up, the creation of employment opportunities in relatively more remote areas will provide the economic impetus to attract women workers.

However, in order to ensure that CPEC can actually be a 'game changer' for gender equality in Pakistan, it has to be informed by a gender analysis. A gender unit for the CPEC Secretariat could provide the required assessments of the CPEC projects from a gender perspective. Similarly, while the enforcement of existing labour laws is important, UN Women has earlier suggested that women's employment can be promoted in CPEC projects through gender quotas and policies that protect against work-place harassment.

In conclusion, we argue that the optimism surrounding CPEC must be tempered with a dose of realism. True, we are looking at a massive inflow of capital that has the potential to seriously transform the economic and social landscape of our country. Yet, we must delve deeper into the characteristics of the proposed plans and that of the jobs being promised. Only then can CPEC's potentially significant economic dividends translate into positive and gender-sensitive social change.

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Revealing Facts Page: Basic Human Development Indicators of South Asia

	India	Pakistan	Bangla-desh	Afghani-stan	Nepal	Sri Lanka	Bhutan	Maldives	South Asia (weighted average)	Develop-ing coun-tries
Total estimated population (millions)										
2000	1,053	139	132	20.1	23.7	18.8	0.57	0.28	1,387T	4,955T
2017	1,339	197	165	35.5	29.3	20.9	0.81	0.44	1,788T	6,290T
2050	1,620	271	202	57	36.5	23.8	0.98	0.50	2,211T	8,473T
Annual population growth rate (%)										
1990-2000	1.9	2.6	2.2	5.1	2.4	0.8	0.7	2.3	2.0	1.7
2000-17	1.4	2.1	1.3	3.4	1.2	0.6	2.0	2.6	1.5	1.4
Life expectancy at birth										
2000	62.6	62.7	65.3	55.5	62.4	71.0	60.8	69.9	62.9	65.6
2016	68.6	66.5	72.5	63.7	70.3	75.3	70.2	77.3	68.7	70.4
Literacy rate (% aged 15 years and above)										
2001	61.0	49.9a	47.5	…	48.6	90.7	52.8a	98.4b	58.8	77.8
2011-14c	69.3	57.0	72.8d	31.7	59.6	91.2e	57.0	98.6	67.7	82.3
Female literacy rate (% aged 15 years and above)										
2001	47.8	35.4a	40.8	…	34.9	89.1	38.7a	98.4b	46.3	71.5
2011-14c	59.3	44.3	69.9d	17.6	48.8	90.0e	48.0	98.7	58.1	77.6
Gross combined 1st, 2nd and 3rd level enrolment ratio (%)										
2000	51.7	41.7b	51.3a	47.2f	57.3	…	53.6a	75.1	50.7	58.9
2014-16c	73.4	52.6	69.0	67.3	72.3	78.5	66.2g	…	70.6	70.6
Mortality rate, neonatal (per 1,000 live births)										
2000	45	60	43	61	40	10	32	25	46	34
2016	25	46	20	40	21	5	18	5	27	20
GDP growth, annual average (%)										
1990-2000	5.6	4.0	4.8	…	5.0	5.3	5.5	…	5.3	3.0
2001-10	7.5	4.2	5.6	9.1	3.9	5.2	8.8	6.2	6.9	6.0
2011-16	6.9	4.3	6.5	5.1	3.7	5.9	5.9	5.7	6.4	4.8

GDP per capita (PPPh, constant 2011 international US$)										
2000	2,495	3,495	1,642	1,064	1,540	5,542	3,539	9,264	2,520	4,901
2016	6,093	4,866	3,319	1,803	2,298	11,417	8,253	14,232	5,620	9,713
Human Development Index (HDI), 2015										
. value	0.624	0.550	0.579	0.479	0.558	0.766	0.607	0.701	0.609	…
. rank (188 countries)	131	147	139	169	144	73	132	105	…	…
Gender Inequality Index (GII)										
. value	0.530	0.546	0.520	0.667	0.497	0.386	0.477	0.312	0.531	…
. rank (out of 159 countries)	125	130	119	154	115	87	110	64	…	…

Notes: a: Data refer to 2005. b: Data refer to 2006. c: Data refer to most recent year available. d: Data refer to 2016. e: Data refer to 2010. f: Data refer to 2003. g: Data refer to 2013. h: PPP means purchasing power parity.

Sources: Rows 1-2: UN DESA 2018; Rows 3 and 7: World Bank 2018b; Rows 4-6: World Bank 2018a; Rows 8-9: World Bank 2018c. Rows 10-11: UNDP 2016.

Highlights (as evidenced by statistics)

Population growth rate has declined in all countries of the region. The growth rate of population has been the lowest in Sri Lanka and the highest in Afghanistan and Pakistan respectively. By the mid of 21st century, the growth rate of population will further decline.

Life expectancy is the highest in Bhutan, Sri Lanka and Bangladesh respectively, and the lowest in Afghanistan, Pakistan and India respectively. It has improved in all countries with the highest rate of increase in Bhutan and Afghanistan respectively, and the lowest rate of increase in Pakistan and Sri Lanka respectively.

Literacy rates and gross combined enrolment ratios have increased in all countries with the lowest latest values in Pakistan and Afghanistan and the highest in Sri Lanka and the Maldives.

Neonatal mortality rate has decreased in all countries with the lowest rate of decrease in Pakistan and Afghanistan. The recent values are also the highest in these two countries.

GDP average annual growth rate increased in all countries of the region between 1990-2000 and 2011-16 with the exception of Nepal. During 2011-16, it was the lowest in Nepal followed by Pakistan, and the highest in India. *GDP per capita* value increased at the highest rate in India and the lowest in Pakistan between 2000 and 2016; only Sri Lanka and the Maldives have the higher recent values of per capita GDP compared to developing countries.

Human Development Index (HDI) value has improved for all South Asian countries over time, as has been stated in *South Asia Human Development Reports*. However, the HDI value is still the lowest in Afghanistan, Pakistan and Nepal, and the highest in Sri Lanka, the Maldives and India respectively. Moreover, recently only Sri Lanka (with HDI rank of 73) and the Maldives (105) are in the category of 'high human development', while India (131), Bhutan (132), Bangladesh (139), Nepal (144) and Pakistan (147) are in the category of 'medium human development'. The only remaining country, Afghanistan (169), is in the classification of 'low human development'.

Gender inequality has decreased in all countries of the region. Currently, gender inequality is the highest in Afghanistan (with rank of 154) followed by Pakistan (130), and the lowest in the Maldives (64) followed by Sri Lanka (87).

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