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ENVIRONMENT AND POVERTY: Perspectives, Propositions, Policies

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ABSTRACT

This paper reviews what insights environmental and ecological economics have provided regarding the ‘poverty-environment’- nexus within the ‘EnvironmentDevelopment’-system.

Various perspectives are discussed, such as ‘the poor as agents’ and ‘the poor as victims’ hypotheses, and more dynamic/interactive variants to these. Earlier reviews are up-dated.

New perspectives on the nexus are identified, including: (a) institutions oriented approaches, (b) livelihood based analyses, (c) capabilities frameworks, (d) rights-oriented approaches, (e) pricing of environmental services (PES).

Policies forwarded at the international level are discussed. Some of the new perspectives identified are beginning to penetrate into these proposals. The validity of PES as an overall recipe to dealing with the nexus is examined critically.

ENVIRONMENT AND POVERTY: Perspectives, Propositions, Policies¹

I INTRODUCTION

The theme of: ‘environment – inequality’ appears on several agendas, but its prime context is the discourse on *sustainable development*. The widely embraced Brundtland definition² of sustainable development recognizes the issues of equity in two broad perspectives: 1) that of intragenerational equity to which poverty as it is currently manifest is related, and 2) that of intergenerational (or broader: intertemporal) equity. Fairness or responsibility in relation to non-human species and other forms of biodiversity would be a third equity-related aspect. In what follows that third aspect will, as an issue in itself, be left aside³. Of the two Brundtland-perspectives, this paper focuses on the first one. The paper will address both inequality and poverty, but it highlights poverty-related features.

The concern with environmental issues since the 1960s emerged mainly out of the problems experienced by the industrially advanced countries in consequence of their economic growth. Developing countries were interested first and foremost in environmental problems related to: ‘... poverty and (the) very lack of development ...’ of their societies: problems to be overcome by development and growth (as witnessed by the 1971 Founex Report, UNEP 1981). Yet it was recognized there that economic growth in developing countries would also give rise to further environmental pressures to be taken into account by those countries. The WCED-report (1987) saw poverty as both a major cause and an effect of environmental degradation and described many parts of the world as being caught in a vicious downwards spiral: poor people forced to overuse natural resources to survive from day to day - this impoverishment of their environment further impoverishes them, making their survival more difficult and uncertain.

We will look at links between environmental quality and poverty (the Poverty↔Environment-’nexus’) as part of a wider framework, the Environment↔Development-’system’. Given the persistence of both

¹ Paper presented at the UNESCO-CERES Conference: ‘Facing social transformations in the 21st Century: a conference on inequality, pluralism and environment’. Utrecht University, 29-30 June 2006. The author is inviting comments on it.

² The definition of sustainable development used here is adapted from the Brundtland Report (WCED 1987: 46): Sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all compatible [WCED here has: ‘in harmony’, JBO] and enhance both current and future potential to meet human needs and aspirations.

³ For further discussion of it see e.g. Opschoor 2004.

environmental degradation and poverty, we will be looking for new perspectives and methods to better deal with both.

A first question then is: *what is known about that nexus, within that system?* This includes concepts, propositions and theories. Another issue is: *what can be done about the problematic aspects of the nexus?* This requires an understanding of the endogenous process in the system, and how exogenous interventions can influence that: (a) by reinforcing 'positive' endogenous processes, and (b) by preventing or curbing negative externalities.

II CONCEPTS AND PERSPECTIVES

Before reviewing the state of our knowledge on the poverty-environment nexus and its embedding in the environment-development system, I will present some of the key concepts and models that play a role in both. In fact, underlying these, what is at stake are perspectives or paradigms and sometimes even worldviews.

Poverty and the poor

Poverty can be defined as a social condition of chronic insecurity resulting from a malfunctioning of economic, ecological, cultural and social systems, causing groups of people to lose the capacity to adapt and survive and to live beyond minimal levels of satisfaction of their needs and aspirations. In recent World Bank shorthand, it is 'pronounced deprivation in well-being' (World Bank 2001: 15). Dimensions of poverty are many and the complex realities of poverty vary between regions, countries, communities and individuals. Some aspects of it are: illiteracy, ill health, inequality, environmental degradation, gender bias. Within this concept of poverty as deprivation one might articulate the environmental side of this by highlighting 'ecologic poverty': a lack of ecologically healthy natural resources needed for human survival and development (Agarwal and Narain 2000).

When it comes to a more precise understanding, one would have to differentiate, as there are inequalities in vulnerability within societies, having to do with dependency on the resource base, access to options for livelihood generation, gender, etc. One main differentiation is that between the rural and the urban poor, but even that is too abstract for many purposes. Within the rural poor UNEP (Tognelli et al. 1995) distinguished according to access to land (landless population, smallholders, etc), mode of production (pastoralists, farmers, etc), ethnic dimensions (indigenous people, etc), gender (including female/male headed households), and recognized special categories such as displaced people. An even more fundamental distinction to be made in the light of the concern with sustainable development is that between the present poor and the future poor, or: the issues of intergenerational equity. We will leave these aside in this section, and focus on the poor in the present generation.

Conventional analyses looked at poverty in terms of income and/or consumption. A 'money metric approach' was (and is) used considering someone poor if her/his consumption or income level is below some

minimum level (the ‘poverty line’) necessary to meet basic needs (e.g. \$1 or 2 per day). On this basis, measures have been proposed such as: (i) the headcount measure of poverty (the number of people below the PL) and (ii) the poverty gap index (the distance of poor people from the poverty line). Inequality was measured by e.g. the Gini coefficient.

Clearly, not all aspects are captured that way (e.g. public goods, assets and access to assets and certainly immaterial dimensions). In fact, some argue (Saith 2005: 3) that the dominant money metric methodology ‘renders a good deal of poverty invisible’ and ‘distorts the understanding of poverty’, by suppressing a number of social and economic realities, by being exclusionary of a wide range of deficits which are held to be significant by those that experience them (ibid: 16). This, as Saith argues, is remarkable, as the world seems intent on halving poverty by 2015, defined in terms of poverty-line based metrics.

When it comes to measuring poverty, the World Bank nowadays tries to first measure ‘income poverty’, and then to introduce indicators of education and health – beyond which it wishes to turn to vulnerability and voicelessness (WB 2001: 16). On ‘income poverty’ it uses particular measures of incomes, consumption and prices (WB 2001: 17) to arrive at poverty lines in the \$1-2 range using a PPP-approach to arrive at internationally comparable metrics. On discussing health and education the World Bank largely notes how inadequate existing measures are (e.g. infant mortality rates and gross primary education enrolment rates) but hardly deals with ways to enhance such measures and integrate them into a wider indicator. The situation is even worse on vulnerability: the Bank reports a ‘growing consensus that it is neither feasible nor desirable to capture vulnerability in a single indicator’ – but seems to leave the matter at that. And then again it concentrates on income inequality. Thus, widening the number of aspects and hence the set of indicators to measure poverty has been tried but not successfully (World Bank 2001).⁴

Apart from the approach to widen the set of indicators in order to better capture the scope of the concept of poverty, there have been attempts to incorporate *within* the traditional metrics more of these elements, by monetizing them. One proposal in this direction has been to capture the monetary value of environmental services to communities (and especially the poorer sections of societies) in ‘environmental income’. This will be looked at in more detail in the section dealing with Pricing Environmental Services towards the end of the paper.

Still, poverty is better defined in terms of vulnerability and deprivation. Vulnerability is related to power/control. Poor people are particularly vulnerable to adverse events outside their control as well as to ill treatment by governmental and societal institutions (i.e. organizations) due to their being excluded from voice and power (e.g. World Bank 2001: 15). Voicelessness and powerlessness are key aspects of poverty, often exacerbated by barriers related

⁴ More success in terms of systematic data accrues to UNDP’s ‘Human Development Index’ (capturing indicators for standard of living, education, and life expectancy) but that index has not managed to replace more traditional and narrower measures such as income or consumption per capita in much of the development policy debate.

to ethnicity, gender, age or occupation. Lack of security is identical to vulnerability taken as: defenselessness and exposure to risks or shocks.

Causes of poverty can be found at every level in society, from the individual to the global. At the international level, trade regimes and policies on international finance play a role and, underlying that, the international economic system in which these regimes and policies are embedded; at the national level monetary and fiscal regimes and policies, the roles of the various actors (state, private sector, civil society) further determine the socio-economic environment of people; at the meso-level markets, sectors and socio-economic groups are relevant in shaping the life worlds of communities and individuals. At the micro level poverty is caused by factors such as: (1) low levels of resource availability, (2) unproductive technologies, (3) poor access to markets, (4) vulnerability to shock in revenues, exchange rates, etc (due to disasters, political processes and market instability). Poverty cannot generally be explained by any single element at any one of these levels. Yet, for good reasons it has been suggested that approaches to alleviate and eradicate poverty are to start at the international level with trade issues, debt and the international migration of labor and capital, before policies at the lower levels might become sufficiently ('sustainably', if one wishes) effective (Pyatt 1999).

The environment: provider functions and infrastructural functions of nature

The biosphere is an envelope for a range of biotic and a-biotic processes operating in and between ecosystems. It provides human beings (as well as other species) with economically *directly* relevant resources and with sinks to absorb the waste humans dispose of as a result of their use of natural resources. Besides these flows of goods and services that have an immediate or 'direct' relevance to human activity and well-being, nature (re-)presents to human society a set of *indirectly* relevant assets: systems and processes that enable the (re-)sources and sinks alluded to above, to work over time (e.g. to regenerate resource stocks, to absorb and recycle wastes). In the jargon of ecologists: the biosphere can be seen as the base of a series of so-called '*life-support systems*'. Life-support systems are the ecological processes that shape climate, clean air and water, regulate water flow, recycle essential elements, create and regenerate soil, and keep the planet fit for life (IUCN etc. 1991: 27; see also Siebert 1982). In other words, they contain ecological processes sustaining the productivity, adaptability and capacity for renewal of lands, water and/or the biosphere as a whole. Thus, they provide a *niche* for species, and for *Homo sapiens* in particular; in more pragmatic jargon, they demarcate an *environmental (utilization) space* (or *ecospace* – Opschoor 1995).

More specifically, the natural environment offers a range of services to society. They fall into two categories (Perrings and Opschoor 1994):

1. *Infrastructural* functions that concern the capacity of an ecosystem to develop and maintain itself, notably (i) the *regulation functions* (De Groot 1992) related to the capacity of ecosystems to regulate balances between ecological processes such as regulation of the climate system and (ii) *carrier*

functions, through which ecosystems provide space and a suitable substrate or medium for human activities;

2. 'Provider functions': *production functions and information functions* (De Groot 1992) related to the provision of goods, services and information directly relevant in societal processes.

Fulfillment of the infrastructural functions enables a system to operate its provider functions.

The environmental utilization space is to a significant degree constrained, at any point in time, in terms of the resource flows it can provide sustainably, due to the capacities of the underlying infrastructural (regulatory and carrier) functions. Maintaining and enhancing provider functions for the benefit of present and future human beings has become a key concern in national, and international environmental policy. Such policy would need to manage the (global regional, national) essential life support systems so that they are able to continue to function.

Development

Traditionally, development has been equated with: deliberately stimulated economic growth, economic growth often being defined as: non-negative changes in per capita income or gross domestic product. Obviously, however, development is more than economic development and economic development is more than economic growth. It has been thought for decades that it was not too unreasonable to assume that the three somehow ran parallel: that if economic growth occurred, this would imply development in a broad sense, or at least: entail enhanced *possibilities* for development. The assumptions on parallelism between growth and development are no longer valid in a finite biosphere, but apart from that there have been other doubts. Concerns over income distributions have led to the broadening of factors taken into account. Because economic development and development as such might not run parallel, human and social aspects were added to the notion, such as: health, literacy, empowerment. 'Human development' is defined by UNDP as a process of enlarging the set of options that people have to improve their livelihoods and determine their futures, operationally focused on productivity, equity, sustainability and empowerment (UNDP 1995: 12).

In the process of economic development natural resources are used to produce physical capital and consumption goods. An implicit use is made of the infrastructural components in human life support systems. Developing countries generally, but especially as their income levels are lower, have a higher dependency on primary economic activities (mining, fishing, forestry, agriculture) and hence on natural resources. These resources include: forests (livelihoods, wood, etc), land/soils (degradation aspect), water systems (habitats of fish, water for irrigation and drinking). This holds especially for the (rural) poor. Moreover, the quality of the various environmental compartments (air, water, soils) is increasingly threatened by pollution, with impacts on living conditions beyond levels that are considered tolerable by developing countries' populations and administrations. Hence, both the resource aspect and the environmental quality concern have entered into decision making and politics.

The concept of *sustainable development* is a synthesis of concerns over ecological sustainability of natural resource use and of considerations of the need for development and economic growth to meet the other needs and aspirations of societies – especially the poor – now and in future.

The globalization backdrop

Development processes and development policies manifest themselves in a setting of internationalization and globalization. These need to be considered also when there is a concern over poverty and environmental quality.

Economic globalization can be defined as a process in which markets, technologies and communication patterns become progressively more international over time. It is of some importance to distinguish between the *process* of globalization that is operating structurally and that is driven by changes in technology, science and development, and the *project* of neo-liberal institutional development grafted on top of this structural process.

After the end of the Cold War, a universalist model of development emerged focused on liberalization and privatization, and ‘sound’ macroeconomic policies. This was the model proposed (and almost literally: imposed, via development programs as defined by and with World Bank and IMF) as the ultimate development strategy. Globalization along these lines is as much a manifestation of social construction as any alternatives would (have) be(en). In that sense the current pattern of economic globalization can be said to be the result of a project, the key actors of which are located at the centers of economic and geopolitical power.

Much of today’s economic globalization is accelerated by pushes towards free trade and free mobility of capital. Globalization, while raising average incomes in those parts of global society that are thus ‘connected,’ is also creating new threats to human security; UNDP (1999) lists: financial volatility, job and income insecurity, health and personal insecurity, political and community insecurity, cultural and environmental insecurities. Globalization is integrating an estimated one third of humanity (most of the populations in industrialized countries and the elites of many poor countries), thus causing new divides (often along old and well-known fault lines) between a ‘global North’ and a ‘global South’ in a form of ‘economic apartheid’ (Sideri 1999). States seem forced to proceed with liberalization and deregulation, and to be reduced almost to being competitors for the location of firms’ financial headquarters and production units. Globalization thus results in eroding vertical sovereignty (relationships between states and the private sector). ‘While globalization integrates markets, it fragments politics’ (Reinicke 1997).

Nancy Birdsall (2005) observed that (global) markets are ‘inherently disequalizing’, making rising inequality in developing countries more rather than less likely. She develops three reasons for this:

1. Markets offer returns to specific assets (financial capital, entrepreneurial skill and human capital) which are unevenly distributed, so the gains of more efficient markets will be shared unevenly.

2. (Global) markets are far from perfect. Countries' capabilities to cope with these market imperfections are unevenly spread which leads to an uneven burden on future resources.
3. Trade, migration and IPR-regimes reflect the market power of the rich enabling them to sustain institutions that erode the effectiveness of markets in delivering efficiency gains to the poor.

Growth in neo-liberal globalizing settings seems to also deepen asymmetries in access to resources and environmental quality. I therefore propose to add:

1. In the absence of standards and regulations safeguarding the systems ensuring the continued delivery of the functions of nature, economic growth ignores the 'soft' constraints as imposed by the environmental utilisation space, and renders the overall economy-environment system prone to enhanced unsustainability;
2. Agents in competitive markets can only survive and develop by processes of cost-shifting (and cost-avoiding), thereby passing on the social costs of environmental degradation in the form of externalities to others, including other generations and other species. In the absence of checks and balances operated by the state, market forces operate under conditions of manifest ecological market failures;
3. More generally, economic and political decision making tend to prioritize current and nearby effects over and distanced (in space and time) effects, due to discounting procedures; on top of that, they are sensitive more to concerns of those that have voice and purchasing power. Both operate against future generations, the poor today, and other species.

As a result, the institutional transformation inherent in the currently predominant mode of globalization tends to increase inequalities, to crowd out care, to erode social cohesion and to increase ecological unsustainability. Without deep-reaching additional environmental policies and institutions to address and curb inherent market failures effectively, these links between economic growth and environmental pressure would push the world economic process further on an unsustainable track (Reed 2002, Opschoor 2003).

III THEORIES AND PROPOSITIONS ON THE POVERTY-ENVIRONMENT NEXUS

The evolution of the environment-development system in history has been studied through the application of a range of theories. Early examples are Malthus' and Ricardo's theories in 19th century political economy with their focus on economy-land interactions and (in the case of Malthus) with a specific interest in links between development and the poor, through population dynamics. Subsequent notions of development led by scientific discovery, technological innovation and the potentials of 'new' territories brought under control in the era of imperialism and colonization shoved aside attention for natural constraints on economic growth (see e.g. Marshall around the turn to the 20th century). We have to wait till the emergence of concerns over limits to growth in the 1960s to see theories come to the fore such as those of Wilkinson (1973) on how 'poverty' in the form of resource scarcity drives

societies into a search for adaptive and mitigative response options including technological change, migration, trade and warfare, or those by Boserup (1981, 1995) on the impact of population growth on the prevailing patterns of (agricultural) resource utilization by intensification.

The present 'grand theories' about population, 'land' (i.e. the environmental utilization space) and development may be divided into: (1) 'optimistic' ones (rejecting, as e.g. Julian Simon did, even the need to worry about environmental constraints as human ingenuity would always find and develop new resources; or claiming, as Boserup does, that scarcities will and can be met by changes in patterns of exploitation); (2) pessimistic (neo-Malthusian theories e.g. of Ehrlich on the devastation caused by population dynamics); or (3) mixed (e.g. the Club-of-Rome's concerns over limits and how only profound societal change would be able to overcome them, and Wilkinson who showed how, historically, many attempts at adaptation to natural resource scarcities failed whereas others succeeded).

It is against these backgrounds that one may locate (and try to interpret) recent theories about the poverty-environment nexus.

Links between economic development and environmental quality can be studied at various levels. At the macro and global levels, there are questions about the environmental repercussions of rising average incomes and associated changes in patterns of production and consumption. The initial assumption (in the 1970s) was one of an *a priori* assumed linear relationship between economic development (in terms of average incomes) and environmental pressures; pessimists assumed even an exponential growth in environmental degradation. More recently, optimists (championed by the World Bank in the preparations for the UN Conference on Environment and Development in 1992) elaborated and promulgated the notion of the 'Environmental Kuznets Curve' (World Bank 1992 and much subsequent work) according to which at least the environmental intensity, if not environmental pressure *per se*, would develop with income as an inverted U. Thus, economic growth was believed to take away the world from ecological decline, like as much as 40 years earlier Kuznets had assumed that growth would automatically make the world a more egalitarian place.

Whatever the realism of the hopes expressed in part of the EKC-literature,⁵ there is little doubt that in the stages when average incomes are relatively low, economic development will be associated with rising *national and regional* levels of environmental pressure, in the forms of: levels of pollution, levels of resource depletion and degrees of impairment of regenerative and absorptive natural processes e.g. by conversion of natural ecosystems into land for development. Nations (and regions) may try to externalize the implications of that e.g. through trade with countries that are better endowed in terms of natural resources, or that are less capable of warding off trade-based transboundary transfers of environmental pressures. They may also respond by

⁵ Qualms about that are summarized in Opschoor 1995, when it comes to global Kuznets Curves, or lower level ones in the context of the OECD region. Here, the focus will be on the growth-environment realities in developing countries.

allowing environmental degradation to the detriment of future livelihoods and welfare levels, within their own territories.

At the *global* level, there is not much doubt that the world is getting poorer in terms of natural resource availability. In terms of responses to that, science often point at buffers to the impacts of that through substitution (i.e. replacing natural resources by produced capital and human resources in production processes). Another response is to let it happen and ‘eat up’ ecocapacity at the expense of future resource endowments and ecosystems resilience. A third response (at all spatial levels) is that of ‘mitigation’: trying to prevent rising environmental pressures by innovation (new technologies and better management practices, more environmentally sensitive institutional arrangements).

The literature on the ‘ecological footprint’ and much of the Kuznets discourse makes clear that when current claims on the environmental utilization space rise due to economic development, this may make matters worse in an inter-temporal (and inter-generational) perspective. The rich and those who are growing richer, are eating up the global cake and are responsible for the cake’s disappearance from the global dinner table (and bakery shops). It was for very good reasons that at the UN Conference on Environment and Development in 1992 in Rio de Janeiro the developing countries called on the rich nations to ‘make space for the South’.

The relation of poverty–development: micro perspectives

Much of the work on environment-poverty has taken a micro (or bottom-up) perspective and tended to focus on the validity of certain assumptions embedded in the grander stories discussed above. I will synthesize reviews by Durayappah (1996, 1998), Markandya (1998, 2001), and Ekbom and Bojo (1999), adding more recent empirical work on the nexus.⁶

The first perspective to mention is that poverty causes environmental degradation, with the poor as agents. Put in formal terms:

$$D = f(Pov) \tag{1}$$

Below, we will refer to it as the ‘agents’-perspective. Elaborations include hypotheses such as: ‘an increase in poverty results in an increase in degradation’ (1a) and: ‘an environment inhabited by the poor will be more degraded than one inhabited by the rich’ (1b). And, at the macro level: indebtedness will impair the possibility to mitigate degradation and hence higher relative levels of debt are associated with more degradation (1c).

An alternative paradigm is that of the poor as victims, rather than agents, of environmental degradation. Put more formally:

⁶ Older sources on the nexus include: Cleaver and Schreiber 1994, Dasgupta 1992, Durning 1989, de Janvry and Garcia 1988, Jaganathan 1989, Jodha 1985, Leonard 1989, Mink 1993.

$$Pov = f(D) \quad (2)$$

Below, we will refer to it as the ‘victims’-view. A variant of this is that a deterioration of the environment will hurt the poor more than the rich (2a).

One can combine the above two views in a dynamic version in which environmental degradation will lead to further poverty with even more degradation as a consequence, or: ‘an increase in poverty results in an increase in degradation’. Thus, we arrive at a first ‘downward spiral’-perspective:

$$Pov = f(D[Pov]) \quad (3a)$$

and/or

$$D = g(Pov[D]) \quad (3b)$$

Often population growth is brought into the model, to get away from a merely comparative approach into one that would show the dynamics of the nexus; population growth then is depicted as causing both more environmental degradation and more poverty. Formally:

$$D, Pov = f(\Delta Pop) \quad (4)$$

Of course, if it was especially the poor who contributed to population growth, then they (i.e. the poor) would indirectly have to take the blame not only for environmental degradation but also for their own fate as being poor:

$$D, Pov = f(\Delta Pop) = f(\Delta Pop[Pov]) = g(Pov) \quad (4.1)$$

System 4 could be dynamized further by combining it with 3, to endogenize the links between degradation and poverty. This is the Malthusian variant of the downward spiral.

Against these population-driven theories others would emphasize that, at a systemic level, it was wealth or richness rather than poverty that consumed the earth’s resources and that in the face of resource scarcities wealth (or the wealthy) would crowd out the poor and close off their access to the resource base, in an attempt to perpetuate the access of the wealthy to the environmental utilization space. Here, the poor are being victimized in a dynamic setting and the rich are blamed. So, here we arrive at a political ecology inspired alternative to perspective 2:

$$Pov = f(D) = f(D[W]) = g(W) \quad (2.1)$$

Behind this is a hypothesis that higher per capita income increases environmental pressure (2.1a). More recent variants of this would relativize this: as average incomes grow, associated environmental claims per unit of GDP would go down in relative terms and, eventually, in absolute terms (2.1b). The latter is the Environmental Kuznets hypothesis discussed above. Of course the type of link expressed by 2.1 may give rise to ecological distribution conflicts and processes of societal change (reformist, or even

revolutionary) aiming at curbing these asymmetries (Martinez-Alier 2002); these will be discussed in more detail in section IV.

These perspectives were beyond mere hypotheses; already before they were adequately tested, they turned into ‘schools’ churning out policy recommendations of various (and often contradictory) sorts. Markandya, looking at the empirical evidence available toward the end of the 1990s, concluded that: ‘The linkages between poverty/income distribution and environmental policy are complex and not as well understood as they need to be’ (Markandya 1998). He held that one should analyze the nexus in a wider context, and include at least affluence and population. Understanding the role of institutions in these linkages he held to be the major knowledge gap⁷. Durayappah (1996, 1998) had shown that one has to contextualize the analysis: for different ecosystems and for different types of environmental goods, different perspectives may prevail – and even for given contexts in terms of ecology and resource use, differences in social systems may influence the nature of the prevailing perspective. The sentiment expressed by both of them was, that institutions and institutional failure (Durayappah 1998) were likely to matter. Incomplete property rights might reinforce or perpetuate vicious circles (Ekbohm and Bojo 1999), ‘important social changes have resulted in concurrent increases in poverty and environmental degradation’ (Markandya 1998). To this could be added a wider set of institutional failures including market failures (Opschoor 1996). This then led to a rather vague and categorical perspective: institutional failure may engender both environmental degradation and poverty:

$$D, Pov = f(Inst) \tag{5}$$

Now, what does empirical research tell us about these various perspectives or relationships?⁸

On the ‘poor as agents of environmental degradation’- perspective: Dasgupta 1997 (and many others) find this hypothesis not generally true (and they are inclined to argue the other way: poor know they live off their environment and hence are prone to preserve it) – see e.g. Ostrom for this argument). Others, in a similar vein, argue that the environmental pressure of the poor is low, relatively speaking. Markandya (2001:4) finds there is little or no work relating changes in poverty to changes in environmental quality. There

⁷ The first ones to point at the policy failures as common causes in explanations of the co-development of poverty and environmental degradation, and hence as a more relevant handle to solving these problems than e.g. checks on population, diffusion of technology or relocation of poor farmers) were Heath and Binswanger 1996.

⁸ For further reading: Pillai 2001 provides a thematic bibliography focusing on quantifiable links between poverty and environment, with themes linking environment and poverty to e.g.: health, resource dependency, resource degradation, role of policy and distributional impacts, environmental valuation and degradation, micro behaviour, gender, property rights, participation and empowerment/role of the state, social capital and natural capital, migration, natural disasters, sustainable development, livelihoods, etc.

are some correlations suggesting that the higher the level of poverty, the lower the probability of a plot being under forest cover. These results are not always corroborated. However, Shively (2004), looking at forest degradation in Indonesia, Malaysia and several Latin American countries, *does* find the poor to cause degradation, sometimes to merely subsist, sometimes to enrich themselves, sometimes to buffer shocks. ‘Hard times for households translates into hard times for forests’ (Shively 2004: 133). And what is more, (and perhaps more comfortable) he finds the poor to be rational agents: responsive to the provision of alternatives and incentives. Poor people may have limited resources, but they can have capabilities to adapt to environmental degradation, to mitigate its effects on livelihoods and to rehabilitate resources (Scherr 1999:8). Some strategies imply further impoverishment; others generate welfare effects but do not improve environmental degradation; yet others pose win-win options.

Neumayer (2005) tried to test another aspect of this ‘agents’-perspective: the link between indebtedness and the rate of natural resource exploitation. Surprisingly, this link was not confirmed systematically for a range of resources (mineral and fuel, crops) which hence casts doubts.

Ekbom and Bojo (1999) address causal mechanisms that would explain the agents hypothesis as put forward in the literature: (a) alleged shorter time horizons of the poor, and (b) increased risk aversion and higher discount rates of the poor. They reject the former on the basis of the Ostrom-argument: ‘under favorable conditions the poor enter into activities of a long-term, sustainable nature’ (Ekbom and Bojo 1999:8). Possibly when other things change (e.g. in case of external shocks) there is a temporal recline of the time horizons of the poor. They find the second argument insufficiently plausible as a general statement. In relation to the discount rate, Moseley (2001) finds a far less monotonous relationship than the one suggested by standard theory: he empirically finds that rates of time preference of the rich can be higher than those of the poor above certain levels of income, due to differences in basic needs satisfaction, socio-cultural variation, and ecological security variation.

The ‘victim’-interpretation is maintained by many – it may be more popular thanks to its political correctness according to many developers. But there *is* empirical material that at least in part supports this view. Markandya (2001) finds evidence to suggest that a deterioration of the environment hurts the poor more than the rich. He also notes that detailed quantitative evidence does not exist (except for fuel wood and some water studies). But the poor may value environmental quality less than do the rich so what the outcomes are in terms of cost-benefit analysis remains unclear. On the macro level, there is the Environmental Kuznets curve suggesting that as poverty declines (or, more precisely: average income rises) environmental pressure will decline at least at the margin. Markandya (2001: 13) finds it ‘inappropriate and misleading from a policy viewpoint’ to rely on this mechanism, as 1) some types of damage are irreversible, and as 2) one cannot deduce intertemporal tendencies from cross sectional data (see also Opschoor 1995). However, Adhikari (2004) is one example of a study that does reveal an EKC-relationship in the case of forests in Nepal. Based on the evidence, it is fair to conclude that even where the EKC appears to be an empirical regularity, it cannot be relied on to simultaneously solve the issues of poverty and unsustainability generally.

In relation to the victim-perspective, Ekbom and Bojo (2001) find that:

- the poor live in areas with low environmental quality and lack the resources to relocate to better places. Extreme environmental stress may force poor to migrate, but not necessarily to adequate alternative locations.
- The poor are more vulnerable to loss of soil resources. This may not be true in all cases: Adhikari (2004) finds differently in the case of Nepalese communal forests.
- The poor may be relatively more dependent but the rich consume relatively more. Thus, improving natural resources availability is not necessarily pro-poor. Adhikari (2004) finds similarly when looking at community forests in Nepal: there is a real risk that communal forest management will focus on needs of rural elites and thereby may reduce opportunities available to poor.

Ekbom and Bojo also claim that inequality reinforces environmental pressure. This is likely to be true (see above) but they do not show evidence to validate this.

The quagmire/vicious spiral-perspective (if not: paradigm) is the modern version of Malthus' theory of population-driven doom-'unless'. It has a certain amount of support (e.g. Mink 1993).

Where multiple dynamic equilibriums in society-ecosystems relations exist, and where one or more of these are associated with livelihoods below appropriate standards on poverty, the occurrence of external shocks may lead socio-economically marginal (parts of) communities into response patterns that imply asset loss (natural capital or financial capital), thus pushing them into poverty. This can be shown with theoretical scenario analysis and has also been demonstrated with models calibrated on relevant real-life situations (e.g. for the Kenyan Highlands rural economies, Barrett 2006). Bennagen et al. (2006) show how upland forest dwellers, despite their being aware of the negative consequences of forest degradation caused by illegal logging and unsustainable farming, would continue to do for mere lack of alternative sources of livelihoods. My own research in the communal areas of Eastern Botswana showed the same with respect to overgrazing in over-utilized drylands. Prakash (1997) holds that such spirals can be checked by policy interventions. There also is the Boserup-escape route of intensification of production and Ostrom's institutional adaptations (Ostrom 1990; see also Markandya 2001). In reaction to the spiral-scenario, theories have been mobilized on security of access, tenure and privatization; these often have triggered further debate about spin-offs of privatization in terms of increased inequality and exclusion.

Summarizing this section

1. Several of the more commonly held (monistic) views (i.e.: 'the poor' as agents or victims) are not proven. Frequently the poor do suffer more from a loss of natural capital or exogenously driven changes in their environments.
2. Poverty is approached poorly when using money-metric based reductions only (see above); dimensionally richer models might lead to more telling

and more robust approximations of realities in the environment-development system.

3. There is support for the view that where institutions break down, this can result in simultaneous increased degradation and poverty.
4. Some of the simplifications one needs to be aware of, are: the Malthusian downward spiral, the tragedy of the commons, the environmental Kuznets curve, and Structural Adjustment or liberalization as a panacea for all trouble.

IV INSTITUTIONAL AND DEVELOPMENTAL PERSPECTIVES ON THE POVERTY-ENVIRONMENT CHALLENGE

At around 1998 simple general theories on the environment-poverty nexus in terms of the roles of these two variables, and/or of economic and population growth, were seen as untenable. Institutional factors were believed to trigger the co-evolution of degradation *and* poverty. This at the same time drew attention to institutional (and policy) responses as possible ways out of any quagmire or eddy with respect to the two (see next subsection). At present, a new perception of the nexus is emerging. This is to do with a deeper understanding of the nature and dimensions of poverty, and of the ecological dimensions to it. It is now believed that attempts at addressing ecological issues without addressing poverty (and vice versa) are dead ends.

Mainstreaming ecological issues into the poverty agenda was one result of this, but some are taking new turns along that road, (i) towards the identification of 'environmental issues of relevance to the poor' in a livelihoods and capabilities perspective, or (ii) moving away from narrow commodity and market-oriented ones towards rights based approaches (see subsequent subsections). Along the more conventional track, new inroads on the nexus turn to nature as a stock of assets for the poor, which bring us back to the global driving forces (see final subsections).

(a) Institutional perspectives

Institutional 'common root causes' of degradation and poverty include: (1) absence of appropriate institutional settings for resource management and use; (2) lack of markets, (3) lack of alternative sources of income, (4) lack of surplus (incapability to invest), (5) lack of knowledge (i.e. failure of technology / management capabilities to evolve adequately rapidly in cases of loss of environmental space), (6) high degree of single resource dependency. Behind the first one of these factors the dismantlement by colonization and/or modernization of traditional institutions are mentioned, as well as breakdowns due to accelerated demand pressures on the resource base.

These diagnoses are suggestive of ways out of the threatening quagmires by pro-active mitigative, or adaptive institutional responses, community and societal self-organization, and/or policy interventions. In line with Shively's (2004) rational agents' perspective on the poor, they are taken to respond to alternatives if present or presented. Institutional responses potentially effective

in addressing the downward spiraling nexus include (see e.g. Scherr 1999, Reed 2002):

1. increase access of poor to essential natural resources; structural institutional change such as alternative property or access rights and entitlements;
2. creation of broader and more robust resource base and mobilisation towards improved access to resources; improve governance and representation/participation in it;
3. learning about future costs/risk resilience, and about alternative patterns of resource use (technologies) and resource management; capacity development at all levels enabling increased productivity of resource use; improve sustainable alternative resource use patterns
4. instruments, including regulatory ones (e.g. zoning); agreements and covenants; incentives, including 'getting prices right'.
5. create markets for environmental services to poor communities;
6. provide alternative livelihood opportunities, outside/beyond traditional, resource-dependent activities.

More detailed, evidence (Malawi, Indonesia, Philippines, Latin America) based propositions are (see Shively 2004): (a) access to low return forest activities tends to reduce income inequality ('environmental income' – see above); (b) potentially acute tradeoffs between forest protection and poverty alleviation can be avoided by more non-forest based wage work and improved local capacity to establish and enforce rules regarding access and use; (c) better access to schooling and roads, wage reduces reliance on forest-based fuels; (d) non-forest employment and enhanced accumulation of liquid assets do the same. In Latin America a Kuznets-curve was found for forest clearing, in cases where non-agricultural jobs were available, and where chemical inputs and training could be accessed. Similarly, in Nepal education reduces dependency on forests (Adhikari 2004).

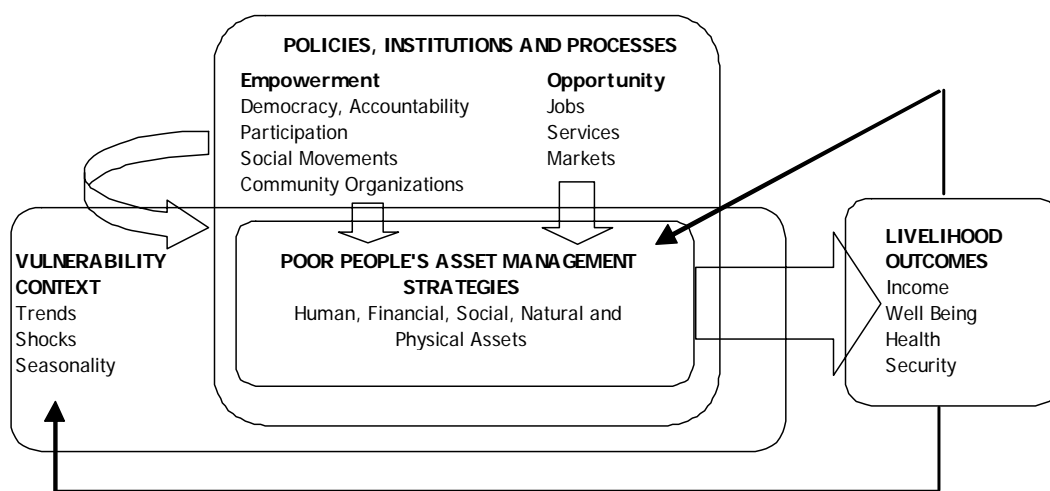
The above reflects a largely local level viewpoint; these analyses and proposals must be embedded within macro and meso level strategies that enable steady streams of financial, technical and human resources to rural areas. In particular, opportunities associated with trade liberalization and globalization must be extended to small farmers to encourage diversification and the creation of off-farm employment. However, economic development may help reduce poverty *and* improve the environment but this is not automatically the case. Policy interventions towards environmental sustainability may address that, but they sometimes hurt the poor more than the rich. There may be distributional effects regarding both the costs and the benefits of such policies. A special category here is: distributive effects in developing countries arising from the environmental policies in OECD countries, the world trade regime, and other international forces. What is needed is adaptations and interventions that are both pro-poor and pro-environment, in fact at all levels.

(b) Livelihoods⁹

The environment matters to the poor for several reasons. One is, that it is a major source of their livelihoods and security. The other is, that it is a source of threats to these livelihoods, and the degree of poverty may actually be a good proxy of their vulnerability to environmental shocks and trends. The notion of ‘environmental poverty’ (see above) captures this.

Several agencies (e.g. DFID and Oxfam) have moved to using a ‘sustainable livelihoods (SL) framework’¹⁰ for poverty analysis and strategy development.

FIGURE 1
The sustainable livelihoods framework



Source: DFID (2002) 'Predicted impact of global change on poverty and the sustainable achievement of the Millennium Development Goals', vol. II.

A livelihood comprises the capabilities, assets and activities for a means of living (cf Chambers and Conway 1992), and it is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base (Durayappah 2001). The SL-approach is based on the premise that the assets status – broadly defined – of the poor defines the range of options open to them, and influences their strategies. Here assets include social and environmental or natural capitals. Institutional and policy developments feed into these strategies through empowerment and enhancing of opportunities.

⁹ In what follows I base myself on a research project I was involved in (Van Heemst et al. 2005).

¹⁰ Institute of Development Studies (Scoones 1998). See also : Carney 1998, Chambers and Conway 1992 and Sing and Gilman 1999.

Strategies will also be affected by externally driven events and conditions such as: (1) trends in population growth, (2) the national and international economic framework, (3) changes in natural resources and environmental quality, (4) politics, and (5) technology, (6) sudden shocks or events such as health problems, earthquakes, floods, droughts, conflict, (7) agricultural problems such as pests and disease, economic shocks, and (8) seasonal vulnerability with respect to developments in prices, production levels, employment opportunities or health can impact on livelihoods (DFID 1999; Chambers & Conway 1992; compare the analysis earlier on in this section).

Coping strategies (i.e. the means by which the poor people respond to adverse or worsening circumstances, could be seen as part of people's assets. Depending on their assets, and the vulnerability context in which they operate, people choose livelihood strategies that will provide them with preferred livelihood outcomes.

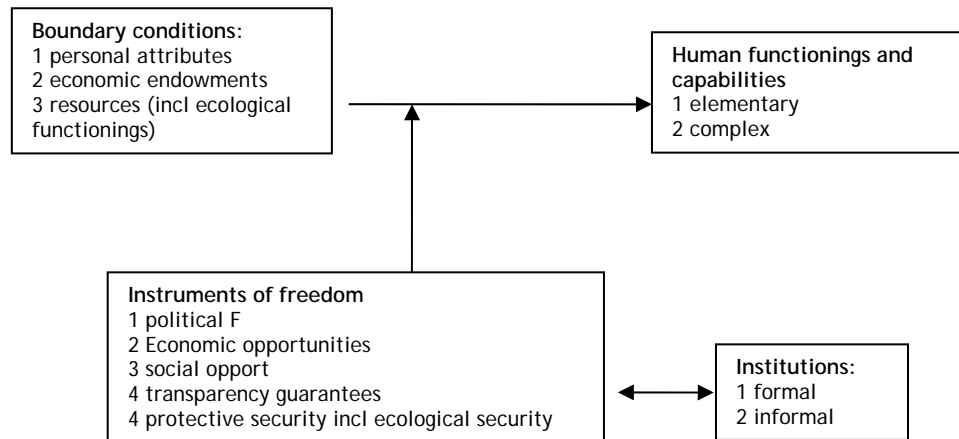
The SL-framework puts institutional changes and policies to do with empowerment and expanding the range of opportunities, into a realistic and relevant context, in which then several livelihood-oriented strategies can be seen to emerge: asset management, and coping with shocks and trends. The SL approach is people centred and is designed to be participatory. It is positive in that it identifies what people have and can do. The poor are not just passive and powerless victims of an exploitative system in the context of globalization, but are subjects who – at least to a degree – construct their own livelihood strategies by drawing on a variety of resources (Kay 2005).

One must acknowledge the importance of contextuality, even if this comes at the expense of simplicity. It is crucial to take into account where the poor live, and what their assets are in relation to that setting: what are these localities' environmental conditions and resource endowments? How is all of that rooted in life support systems (regulation, regeneration etc)? How are these circumstances likely to change/develop? Can the poor themselves do anything about that? The latter question leads to the need of a complementary analysis based on capabilities (see next subsection).

The approach has not gone uncriticized. For example, the conceptual framework is seen as somewhat eclectic: it is very open in terms of which factors and processes to include. Equally controversial is the way the frameworks portray the relationships between these factors. By representing the reality and complexity of a livelihood system in a simple way, the relative importance of some factors and the relationships between the factors are lost. Thus, the SL approach may become too complex and offers little policy guidance. Moreover, Kay (2005) argues that it is insufficiently sensitive to power dimensions. Related to this I would add a concern over the abstract way the macro and international aspects are regarded. It has been observed also that the SL-approach still is insufficiently sensitive to the time dimension of societal change (Haan and Zoomers 2005). Padilla has shown that generally speaking, economic analyses treats future generations unfairly: 'we should recognize and protect their right to enjoy at least the same capacity of ecological and economic resources that present generations enjoy' (Padilla 2002: 81). SL is sensitive to sustainability concerns to the extent that the actors (or the external forces impacting upon them) are sensitive to these concerns, when choosing their

livelihoods strategies. Concerns over future generations and their assets, are not necessarily incorporated. Or, the environment will come into these strategies to the extent that it matters to these agents, and is endogenized into these external processes.

FIGURE 2
Transition from Boundary Conditions ('constraints') to functionings and capabilities (Durayappah 2001)



(c) Capabilities

Access to assets is a key factor in the (S)L-approach. Sen (1981) has analyzed this in an entitlements' perspective – a notion often associated with resources, commodities, etc. More recently, Sen has added the notion of capabilities (Sen 1985; see also Durayuappa 2001) which also features in the definition of livelihoods. Capabilities are different from commodities in that they are features related to the state of existence of a person ('being' rather than 'having').

Nussbaum (1999) has further developed the capability approach. Capabilities are defined in relation to a set of 'functionings' agreed on to being important in human life, such as: being able to have good health, to use the senses and reason, to have attachments to live with concern for other species and the world of nature, to have control over one's environment (political and material – the latter appear to include natural resources etc). As far as Nussbaum is concerned, the emphasis is to be on capabilities rather than on functionings. She sees these capabilities as encompassing the human rights including social, economic and cultural rights.

Amongst these functionings relationships with elements of biodiversity are mentioned explicitly. Deprivation restricts the capabilities that a person has, i.e. his/her substantive freedoms to lead the kind of life (s)he values. It seems logical to include some capabilities in using and transforming natural resources here, especially the provider functions of nature. Added to Nussbaum's lists of

functionings might be the capability to care for the infrastructural functions, i.e. the life support-oriented aspects (cf Opschoor 2004 and Durayappah 2001).

Access (e.g. to natural resources) generates security (and thus contributes to the resilience of communities and societies). These resources, or environmental services, as we saw, flow in from – or are based on – life support systems. Durayappah (2001) referred to the regulatory and enriching properties of ecological systems as ‘ecological functionings’ – analogous to Sen/Nussbaum’s human or social functionings.

Durayappah 2001 builds on the sustainable livelihoods approach by adding the condition that it maintains or enhances societies’ capabilities and assets, while not undermining the natural resource base (i.e. enabling the on-going provision of ecological functionings) (Durayappah 2001). The latter element is new. The more traditional elaboration of the livelihoods approach would highlight a by now familiar set of interventions such as enhancing access to assets, asset improvement, infrastructural and technological development, employment, markets and institutional reforms. It is an approach in which the environmental services and the environment itself are seen as commodities. Durayappah extends his framework of analysis beyond this commodity-bias, by also drawing attention to the life-supporting and other infrastructural functions of ecosystems and by the need to protect these e.g. by safe standards of resource use (see also Opschoor 2004). He also includes the *human* functionings as explored by Sen and Nussbaum. These too are beyond a commodity/market orientation. Durayappah links the human functionings to the poor in particular to the infrastructural services (‘functionings’) of ecosystems, by pointing out that the welfare as well as the functioning of the poor are more directly related to the environmental resources surrounding them and their livelihoods. From this perspective Durayappah even distills a need to transfer ‘stewardship’ over the use and management natural resources to the poor – which goes further than allotting environmental or resource rights or entitlements to them (cf Reed 2002: 183, the poor must have control over the resources in the areas in which they live). It is, however, in line with the idea that human functionings would include those of *care*.

The approach has had some academic application. Durayappah and Roddy 2005 proposed an open ended approach to the poverty-environment nexus through PRSPs, starting from ecosystems and ecosystems services and an articulation of needs and problems by the immediate beneficiaries/ stakeholders. The question addressed then was which of the environmental services (defined as ecosystem functionings) are under stress, and to what extent these stressed functionings are linked with any of the ‘constituents of poverty: hunger, material wealth and livelihoods, disease, insecurity in relation to natural hazards and/or societal conflict, lack of freedom of choice and action. Another example of application is the UNEP–IISD-project in seven country case studies connecting poverty and ecosystems services: for Kenya, Mali, Mauritania, Mozambique, Rwanda, Tanzania (see box), Uganda. (Wong et al. 2005).

In Tanzania, for 23 regions the capacity of ecosystems is reviewed for the provision of 'services and constituents of well-being' such as: to earn a livelihood, energy for warmth and cooking, clean water, nourishment, maintenance of biodiversity. And the degree to which these capacities are under threat is identified. Tanzanians are assessed to experience 'pervasive water scarcity and inability to earn an adequate livelihood', the main problem in most regions being the management of water with most of the population facing difficulty accessing water. Population growth is reported to have degraded the agro-ecosystem to such a degree that its ability to support productive agriculture and large livestock numbers is declining. Human well-being is measured by e.g. the ability to be adequately nourished and to have adequate and clean drinking water, as well as to earn a livelihood. Food supply is showing a decline, reflecting ecosystem degradation, related not only to inadequate distribution and level of rainfall, but also desertification and lack of economic entitlements. Poor people are turning to illegal bush meat hunting for food or for money, threatening wildlife. The ability of the rural ecosystems to provide energy sources to the population is being compromised. Over 40% of the population lives below the poverty line. Given the high rates of poverty and the lack of improvements in garnering better livelihoods, the study concludes that all regions of Tanzania are experiencing an inability to generate an adequate livelihood.

(Wong et al. 2005)

Thus, Durayappah advocates:

- recognizing the dual functions of ecosystems: provider functions and infrastructural functions
- moving away from the commodity-income paradigm to an approach starting from functionings and capabilities
- ownership by the poor of recommended change in people-nature relationships.

In my view the approach may go too far in shifting responsibilities to the poor. As Durayappah himself notices, transferring stewardship to them does not by itself imply that poverty will be reduced or that resource use will become more sustainable. Perhaps more importantly, this approach seems to over-simply ignore the role of the rich and powerful economic agents in claiming resources, and relative powers of the rich and the poor, in terms of control over resources and life support systems, and the responsibilities of the former in terms of the need to curb the environmental damage implied by their production and consumption patterns. We will expand this towards the end of this paper.

(d) Rights-oriented approaches

Access (e.g. to natural resources for food production) generates security (and hence contributes to the resilience of groups). Sustainable security however requires secure access. In this context, Leach et al. (1997) discuss environmental entitlements (see also Nunan 2002: 12). The key notion here is that the poverty-degradation nexus is mediated by poor peoples' interactions with their environments, structured by macro-level processes. Common property resources are vital resources for the poor. Women especially are

involved in using common property resources (but not in their management). The poor are progressively excluded by privatization and commercialization. Modernization/globalization puts indigenous institutions for common property management under pressure (Nunan 2002). Environmental entitlements then refer to structured access to resources (tenure, property, etc), and control over the use of resources. There are several very clear gender-aspects to this, that will not be explored here.¹¹

Vulnerability to environmental shocks – one aspect of environmental poverty and hence of poverty *per se* – may trigger implicit claims to justice by the poor. More so, so-called ‘ecological distribution conflicts’ may give rise to processes of societal change (reformist, or even revolutionary) aiming at curbing these asymmetries. They tend to push for more pro-poor distributions of access and *de facto* and *de jure* rights to natural resources. Martinez-Alier (2002) refers to this as ‘the environmentalism of the poor’: a livelihood-based environmentalism concerned not only with economic security in the market sphere but also concerned with non-market access to environmental resources and services. In a range of publications he (and associates) discuss a variety of cases in which poor people have defended their access and entitlement to natural resources, such as the Chipko movement in India, Chico Mendez’ struggles in Amazonia, the Ogoni and Ijaw in the Niger delta and places this in the context of globalization (e.g. Guha and Martinez-Alier 1997, Muradian and Martinez-Alier 2001, Martinez-Alier 2002).

Finally, Padilla has shown that generally speaking, factual social and economic development within a given environmental utilization space treats future generations unfairly: ‘we should recognize and protect their right to enjoy at least the same capacity of ecological and economic resources that present generations enjoy’ (Padilla 2002: 81).

(e) Natural resources: ‘the wealth of the poor’? Pricing environmental services

Natural resources can be harnessed into the struggle against poverty in ways that at the same time might enhance the sustainability of their use. They are capable of generating resources for the poor to use *and* to market – i.e. as sources of environmental income (see WRI 2005), by deriving utility directly from the resource base and by obtaining payment for environmental services (PES). The logic behind PES is, that those who provide environmental services should be compensated for that and those who enjoy these services should pay the cost of their provision. When such payments would generate (net) ‘environmental income’, PES would contribute to poverty alleviation and financial sustainability. Apart from incomes, PES may be relevant to welfare as it provides for a more diversified set of livelihood options, especially to poorer

¹¹ E.g.: gendered division of labour and responsibility, gendered property rights, gendered positioning in households, communities and other institutions, gendered influence on political economy, ecological characteristics codetermining gender-environment links.

households, and can make these less vulnerable. Another advantage may be that PES programmes could lead to more secured and/or formalized resource rights. PES may indirectly stimulate sustainable resource use, as harvesting or producing these services sustainably would be in the obvious longer term interest of those who are active in this harvesting. PES clearly is a strategy in the traditional, commodification- and market-oriented, economic approach to development.

Environmental Income is defined as: income earned from uncultivated natural resources (Sjaastad et al. 2005). Gross environmental income out of these resources consists of capital consumed (i.e. a natural capital depreciation component) and costs of intermediate inputs used in capturing the benefits, and value added, i.e. labour costs (an income component to the community) and profit (rent, and normal profit). In an idealized world (under conditions of perfect competition) the natural *rent* realized within the first link of a product chain is a precise and logical measure of Environmental Income; in practice, a *value added* measure may be a second-best alternative. In measuring Environmental Income as rent, one measures only those parts of income that can be attributed to 'nature'. Value added also represents labour costs plus normal profits, or: the value of earnings in alternative employment or the opportunity cost.

Results of recent research suggests that PES indeed offers opportunities in terms of the objectives stated above (cf WRI 2005, Chapters 4 and 5), but at the same time has been shown to not be effective in all contexts. Ensuring that the poor benefit is not straightforward (Bennagen et al. 2006). Care must be taken to deal with indirect or external effects on other poor than those involved in PES-related activities. In fact, one person's income may be obtained at someone else's costs (e.g. the revenues of upstream tree cutting and associated downstream costs of flooding etc). Or, while reducing absolute poverty at all local income levels, PES may exacerbate the situation in terms of relative poverty (i.e. lead to higher inequalities – Zilberman et al. 2006). PES programmes may also lead to the exclusion of non-participants from a particular resource base, and to higher fees to be paid for the environmental services, also on local markets. They *are*, in fact, a way through which a process of commodification of environmental services will be triggered. PES isn't a panacea, nor will it be a sufficient instrument to attain the goals of poverty eradication and ecological sustainability. In other cases, meeting both the poverty reduction objective and the sustainable use one, is not tenable in the long run – and where this tradeoff occurs, environmental sustainability might come under threat (Zilberman et al. 2006). PES programmes may in many cases have to be seen as element in packages only, where the package contains significant diversification efforts as well. Another point, also raised by Zilberman et al. is, that 'connectedness' of local economies is important. When areas supplying engaged in PES are integrated into the global economy, positive effects on the poor are more likely than when the area is isolated (and where, therefore, PES might provide shocks to the prices of output and labour). Much more research, especially of an empirical and comparative nature, is necessary to develop better perspectives on how PES can be made more pro-poor and sustainable.

If resources are to be a source of wealth for the poor, they need to have a claim over the associated environmental income. If their 'stewardship' over these resources is to induce them towards sustained and enhanced productivity of the ecological processes, then these claims ought to be secured so that the benefits of such stewardship accrues to those who provide it. Typically, however, the poor rarely have that security. There may be lack of legal ownership an access, there may be a lack of control or representation of the poor in decision making about resource use and management, there may be lack of knowledge or technical and financial means to exercise effectively such stewardship, etc. It can be expected that the governance context and economic power relations related to the resources considered, will influence the stability of the revenue flows, the amount of leakage from these revenues to other agents, and, generally, the distribution of the revenue. Thus, the effectiveness of PES can be enhanced by auxiliary institutional measures and the approach needs to be complemented by additional types of intervention (e.g. employment outside the direct exploitation of resources).

Conditions that (co-)determine whether natural resources can be seen as potentially income-generating wealth of the poor, include institutional features such as resource rights regimes (including land tenure). Resource tenure can be explicitly and formally articulated in legislation and contract-based titles etc; it can also be embedded in informal regimes and institutional structures. Tenure can be private, communal, state or 'open access' (that is, situations with no ownership). Public ownership may go hand in hand with recognized lower level (communities, individuals) use rights with respect to services rendered by the resource systems (such as fruits and timber from forests). WRI (2005: 58) identifies the following types of tenure right: resource use rights, exclusion rights, rights to derive incomes from resources, rights to sell (lease and rent out) the rights mentioned to other agents, rights of succession, right to protection from illegal expropriation. In addition, WRI lists as responsibilities: obligation to not use the resource in ways that are harmful to others, obligation to surrender – in certain situations – the rights mentioned through lawful action. It is clear that these rights and obligations are not always in place or secured, and that may provide scope for effective enhancement of sustainable and poverty reducing through institutional reforms according to these lists.

Even if the PES-approach were enhanced by putting it in an institutionally more favorable environment as suggested here, it would deal with only part of the problems in the nexus – given that we adopted the views that both on poverty and on sustainability higher level structures and processes co-determine and to a large degree drive conditions in the local contexts. These factors must be taken into account; hence we return to the macro and international level processes of globalization.

(f) Globalization and the prospects for effective policy alternatives

An important global trends in institutional change related to environmental resources has been the tendency of devolution of resource control/management to lower spatial level agents (Engel 2006, WRI 2005: 55ff; both

refer to this tendency as ‘decentralization’). These devolutions frequently have given rise to a stronger role for local communities – often poor – in the management of these resources. In many ways this seems to come close to the enhanced ‘stewardship of the poor’ that was promoted by Durayappah (2001). This was believed to lead to more sustainable management (on the logic presented above in relation to PES). Literature shows (as Engel reviews) that current institutional reforms often suffer from insufficient transfers of power, insecure rights, and failures in addressing externalities, eroding incentives towards sustainability-oriented stewardship.

A second tendency relevant in connection with the nexus, is economic globalization. Globalization in many cases came with structural adjustments or similar (nowadays somewhat softened) forms of market-oriented institutional change and that in fact has led to a decreased political/administrative capability to effectively enforce or expand systems of property right (or resource rights in general). Engel concludes that: (1) globalization-led economic development has indeed led to increased additional income sources but that in itself has often gone hand in hand with reduced collective action towards sustainable local resource management; and (2) it raises the commercial value of local resources to commercial actors and leads to a larger role for private enterprise (often transnational) in primary production (including resource extraction) (Engel 2006). There is increasing incidence of community-company conflict over the use of the local commons and negotiations over rights to them. Transactions under these conditions may lead to outcomes that can be socially beneficial as well as environmentally more sustainable, or lead to selling out (often at very low prices, and for short term financial gains) of traditional entitlements without guaranteed improvements in the sustainability of the use of the resource. It is in this way that the macro and the international penetrate into the local and where one may discern how notions of enhancing the stewardship of the poor over natural resources to tackle the nexus, may be romantic and/or politically naïve.

The tendency of devolution described above is part of a broader tendency of decentralization to do with the political and administrative repercussions of the predominant mode of globalization (see earlier sections). The shortcomings of devolution programmes as outlined above, are in fact aggravated by prevailing patterns of globalization (Engel 2006; see also my earlier analysis).

In conclusion, the analysis in this section calls not so much for a movement to isolate the world’s locales from international economic processes, but rather: to regulate these processes when they affect these locales (cf Opschoor 2003), to boost the *in situ* resource tenure systems and to work towards fair and sustainable transactions via governmental or civil society countervailing (bargaining) power (ibid.). It also calls for strengthening the ways in which environmental services can be priced in ways that capture the full benefits of *sustainable* resource use (see above).

V POLICY INITIATIVES ON THE POVERTY–ENVIRONMENT NEXUS

In a very early study by Ecological Economics and UNEP on: Poverty and the Environment: reconciling short term needs with long term sustainability goals (Tognetti et al. 1995) recommendations were based on the then existing state of the art – essentially a UNCED- inspired, forward-looking approach. It could be used as a benchmark to see what development there has been in the thinking since then and since the E-P-nexus was understood to be an ellipsoid field inside a much larger area. The study's recommended main strategic lines were:

1. Invest in natural resources as well as in human capital (nutrition, health, education);
2. Create appropriate incentives and accountability systems;
3. Co-ordinate between international, national and local level institutions.

Since then, newer views and approaches have come forward since 2000, often in conjunction with the process leading to the 2002 World Summit on Sustainable Development. In varying degrees they have been incorporated in international policy documents and proposals.

The first one to mention is the *World Bank*- environmental strategy, the thrust of which is:

1. Improvement of the Quality of Life, by improvement in health, enhanced livelihoods of the poor, and reducing their vulnerability.

Improving the quality of growth by setting up regulatory and institutional frameworks for SD-management and for support of an environmentally and socially sustainable private sector.

Focusing on positive linkage between poverty reduction and environmental protection; a focus on local environmental benefits (i.e. PES)

What this amounts to in reality is a focus on the second element: improved quality of growth. The rationale for this is, that market and policy failures have caused inefficient use and inequitable distribution of environmental assets. '*Getting the prices right*' as a strategy; ecological systems and their services seen as commodities (Durayappah 2001: 5). Even the pro-poor growth policy seems to essentially opt for an enabling environment for attracting and gaining foreign exchange. The policy utilizes Poverty Reduction Strategies and associated Papers for individual countries. Early 2006 there were 26 such national studies. Though they represent a major step forwards compared with the days of generic structural adjustment programmes, there are still problems with these strategies. To begin with, it is unclear what the commitment to these strategies is 'on the ground', i.e. how intensively and authentically the poor – allegedly the major beneficiaries – have been allowed to influence the PSRPs. For several reasons, the PRSPs have been criticized for their inability – still – to link economic growth strategies with poverty reduction (Fortmann 2002: 17). Moreover, there often is rather artificial attention for the issues of environmental sustainability: at best there is articulation of the significance of a pre-determined set of environmental

problems (Durayappah and Roddy 2005) rather than an approach towards eliciting the real resource issues the poor are faced with.

Secondly, in a paper to the World Summit on Sustainable Development (Johannesburg, 2002) the UK Department for International Development, the EU DG for Development, UNDP and World Bank issues a joint paper (DFID et al. 2002) outlining a strategy for addressing environmental issues ‘that matter to the poor’ including four priority areas and a number of more detailed points:

1. Improving governance to create a more enabling policy and institutional environment; this includes integrating poverty-environment issues into national development frameworks, strengthening decentralisation for environmental management and empowering civil society, reduce environment-related conflict and improve poverty-environment monitoring and assessment;
2. Enhancing the assets of the poor to expand sustainable livelihood opportunities and to reduce vulnerabilities to hazards and conflicts; this includes strengthening resource rights of the poor, enhancing their capacities to manage the environment, expand access to environmentally sound and locally appropriate technology and strengthening participatory disaster preparedness and mitigation capacity;
3. Improving the quality of growth to promote sound environmental management and protect assets and livelihood opportunities; this include integrating environment-poverty issues into economic policy reforms, increased use of environmental valuation to adjust national income accounts, encourage appropriate private sector involvement;
4. Reforming international and industrial countries’ policies to address the poverty and environmental concerns of developing countries and the poor. Improve trade policies, make FDI more pro-poor and pro-environment, enhance the contribution of multilateral environmental agreements to poverty reduction and encourage sustainable production and consumption.

This apparently widely supported approach appears to take the first strategy several steps forward by drawing attention to the wider issues of governance, a focus on resource enhancement, an emphasis on a rights-oriented approach and reforms at the level of international economic policies. The question is, to what extent this view is making it into the realities of development processes that affect those ‘in’ the nexus, or the agents influencing it from the outside.

Thirdly, UNDP and UNEP have taken the lead in proposing a Poverty-Environment Initiative supported by the ‘Poverty Environment Partnership: a club with members such as ADB, EU countries, UNDP, UNEP, WB, USA , to reflect and build consensus, etc. The initiative is to use the sustainable livelihood framework to reduce poverty, and the capabilities perspective. The focus is on 5 policy interventions:

1. access to assets
2. asset improvement
3. infrastructure and technology development

4. employment and compensation for the poor
5. market and planning reform.

So, despite the rhetorics on the basic approach, the focus still is on income generation and commodities/markets. UNEP also collaborated with UNDP and the World Bank in generating proposals by the World Resources Institute (WRI 2005) based on the notion that natural resources are (or could be, to a large degree) ‘the wealth of the poor’, capable of generating resources for the poor to use and to market – i.e. as sources of environmental income (see above).

All more recent strategies seem to have adopted Wolfgang Sachs’ slogan to the World Summit on Sustainable Development, that there will be no ‘ecology’ without ‘equity’ and no ‘equity’ without ‘ecology’ (Sachs 2000). Yet, the issue of balancing these two remains: some of the strategies emphasize poverty more and others the environment. They also differ in the keys suggested to open the doors to sustainable progress and progress in sustainability: growth (albeit with curbed environmental ramifications), livelihoods/capabilities or resource base preservation. All seem to still be very much on the drawing boards of the policy makers, making for real development paths being pursued that are very close to a somewhat policy-couched and slightly more context-sensitive, market based, growth oriented, variant to the liberalization/industrialization/trade scenarios that are typical of the current stage in globalization. All seem to stay close to the commodification/market oriented mainstream. All strategies call for new approaches to monitoring what is happening in and with the nexus, in various settings.¹² In comparison to early approaches (see e.g. Tognetti et al. 1995) there now seems – at the conceptual level – more interest in a deeper concept of livelihood, a wider notion of capabilities and a better knowledge of institutions. When it comes to agency and agents, older approaches often were more explicit on the roles of the various actors including those in civil society and more open to the thinking in terms of antagonisms and differences in

¹² Ekstrom and Bojo (1999) have an appendix with selected environmental indicators (in a Pressure-State-Impact-Response framework) against Population, Development, Land Use, Biodiversity, etc. Shyamsundar (2002) proposed to World Bank a set of indicators on health, poverty and natural resources, by linking poverty issues to natural resource problems that influence these (eg: income and opportunity issue, deforestation, via quantity of consumption derived from common lands). For indicators in the context of MDGs, Sectoral themes in relation to MDGs, and sectoral (environmental) indicators: Davidson et al. 2003. Nunan et al. (2002) proposed a set of generic poverty-environment indicators for potential use in PSRPs, through reviewing environmental issues of relevance to the poor, drawing on results from participatory poverty assessment. Key areas were: environment and health, forest cover, soil degradation, water quality and quantity, fisheries and natural disasters. Examples: proportion of the poor with secure use rights to land for farming, access to sanitation facilities by women, etc. Reed and Tharakan (2004) developed and applied poverty environment indicators for WWF’s Macroeconomics Programme Office with a focus on capturing the most significant factors in removing obstacles and bringing about positive change in the PE-dynamics.

interests. Post Johannesburg thinking on sustainable development (and poverty-environment within that) reflects the then embraced ideas of *partnerships* between the various categories of agents.

VI CONCLUSIONS

This paper has explored links between (and around) two focal concepts that, within the elliptical field that they evoke, have been seen as hanging together in a nexus ('the nexus') with a potentially tragic dynamic related to it. The concept I allude to are: poverty and environmental degradation. The field I mention is that of development-environment relationships. The dynamic referred to is the alleged 'downward spiral' of the two elements re-enforcing one another over time, catalyzed (in neo-Malthusian variants of the spiral) by population growth.

Poverty has been proposed to be a vector ('an agent') of environmental degradation where others highlighted degradation as the cause of deepened poverty ('the poor as victims'). The two added together in a dynamic setting yield the vicious downward spiral, referred to in the Brundtland Report that put the need for *sustainable* development on the agenda. The concept of *sustainable development* is a synthesis of concerns over the ecological sustainability of natural resource use and of considerations of the need for development and economic growth, in order to meet societal needs and aspirations now and in future. The World Summit on Sustainable Development was told to prioritize the nexus and to address both focal points simultaneously, as there will be no 'ecology' without 'equity' and no 'equity' without 'ecology' (Sachs 2000). Meanwhile, development 'on the ground' of the planet has taken a direction and a form referred to as globalization, or: 'neoliberal' globalization. Apart from the short term benefits in terms of higher levels of trade, division of labour, and – especially - average income and reductions in absolute poverty ('income poverty'), there are some embedded negatives: globalization in its purely neoliberal forms tends to, *inter alia*, increase inequalities (i.e. gives rise to mounting *relative* poverty), to crowd out care and to increase ecological unsustainability.

These are some of the key elements in the setting in which our nexus should be seen.

Research on it initially attempted to establish (or falsify) the theories or hypotheses of poverty or the poor as agents or as victims. At the same time, the role of population dynamics was connected with the elements of the nexus and empirical work tried to address these links. Moreover, others highlighted the role of the consumption (and associated production) patterns of the wealthy in terms of claiming whatever 'space' the biosphere or more local subparts of it, provided to the poorer parts of societies – global, national, local. The empirical data on the poverty-environment nexus do not indicate that there are simple, single, general relationships between population, economic pressure and poverty. If some causal relationship could be found to dominate or prevail in one context (environmentally or socially defined, or economically: level of development, or sectors) another one might – or would – in other settings. So much was clear on the basis of empirical studies towards the end

of the last century –except perhaps the inclination of many to accept the ‘poor as victims’-paradigm, if one were forced to make a choice.

A next development advocated by several researchers then was, to change the setting of the problem, and to see the two elements – the nexus – as co-determined in a larger system with common joint driving forces. These were looked for initially especially in the *institutional* domain: where institutions break down or are replaced by less appropriate alternatives, this can result in simultaneously increased degradation and poverty. This research then found allies in much work on common pool resources and related institutions-oriented social science research – which, incidentally, often was very helpful in suggesting local level remedies and endogenous responses to the conundrum. Apparently, the spiral could be reversed – at least sometimes and under conditions worth exploring.

Another was, to address the point that the ‘variables’ in the nexus (poverty and environmental quality) might have been overly simplified approximations of complex realities. This, for instance, allowed an exchange with those who worked in the field of poverty studies where much richer approaches to poverty than through ‘money metrics’ evolved.

Poverty is not a number – it is even more than a ‘pronounced deprivation’: it is a *social relationship* (Reed 2002:177) of competition among individuals, social groups and the state in a pursuit of wealth and power. In this perspective, poverty is the result of an inability of people to gain access to life-supporting assets (productive, environmental, cultural) while others are capable of securing the conditions for stable, productive lives. Hence, overcoming poverty may require the changing of social relations as well as changing these capabilities, asset endowments, etc.

Poverty also is a *structural phenomenon*; and a basic requirement for dealing with the structural causes of poverty is to design and implement an appropriate development strategy (Kay 2005), with the associated change at the macro and international level in terms of regimes governing production, consumption, trade, division of labour, and access to the environmental space.

On the environmental side, awareness has been growing as to the complexities underlying the provision of environmental goods and services, and natural resources in the form of infrastructural ‘ecological functionings’ and ‘life support systems’. Economic development affects ecosystem balance and, in turn, is affected by the state of the ecosystem. In addition, critical impact thresholds, and vulnerability to environmental change impacts, are directly connected to social and economic conditions. Poverty can be both a result and a cause of environmental degradation. Infrastructural functions of ecosystems typically are to be preserved for future generations and by definition exceed what economic structures such as markets could manage on their own.

Despite our lack of knowledge at the factual level, the above newer insights have helped in searching for more sophisticated approaches towards learning about environment-poverty relationships and towards addressing problems with the nexus. There now seems – at the idealistic level – more interest in a deeper concept of livelihood, a wider notion of capabilities and a better knowledge of institutions. Also, the interest in variability around trends,

and in risks, is overtaking the use of the linear generalizations of not so long ago. Meanwhile, we should realize that almost all of the work reviewed above, deals with the nexus in the setting of natural resource use, a largely rural development-related issues. Not much work is done on poverty and environment in an urban setting.

Emerging perspectives include:

1. institutional change as poverty/degradation mitigation
 2. sustainable livelihoods strategies (assets and assets management enhancement)
 3. the capabilities approach to human and ecological functionings
 4. rights-based sustainable development (environmental rights, resource tenure, etc)
 5. resources as assets of the poor and a source of environmental income.
- They have been described in some more detail above.

It can be observed that:

All these approaches recognize the need to connect poverty reduction with sustainability in resource use. Still, some emphasize poverty more and others the environment – the need for more, or more sophisticated balancing remains.

They also differ in the keys suggested to open the doors to equitable and sustainable development: property (and related) rights livelihoods/capabilities, or resource base management and marketing.

These perspectives very often tend to take a ‘bottom up’- approach starting from local/regional level analyses of manifestations of poverty-environment linkage.

Most (all but perhaps the capabilities approach) seem to stay close to commodification/market oriented views.

- When it comes to agency and agents, post Johannesburg mainstream thinking on sustainable development (and poverty-environment within that) reflects the then embraced ideas of *partnerships* between the various categories of agents, where a more critical alternative might emphasize power asymmetries, differentiated access, etc.

One element of a broader strategy might be: enabling the poor to gain control over the resources and to capture a larger proportion of the potential revenues of them through the development of systems of marketing and payment for environmental services (PES). This commodification/market oriented view has been seen to bring in benefits as well as costs, to be an opportunity with several risks attached. Although the effectiveness of PES can be enhanced by auxiliary institutional changes (e.g. resource rights) and additional interventions (e.g. off-farm employment), it will remain vulnerable to all the asymmetries mentioned just above, as it opens up decision making on resource use to powerful market forces. That is why the international and macro-level processes need a place in the analyses as much as in the recipes. While the perspectives discussed above seem to still be very much on the drawing boards of the policy advisers, real development paths being pursued

remain very close to a somewhat policy-couched and slightly more context-sensitive, market based, growth oriented, variant to the liberalization/industrialization/trade scenarios that are typical of the current stage in globalization.

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