Review of the Poverty - Environment Links Relevant to the IUCN programme[1]

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Presentation

The May 2004 External Review of IUCN recommended three separate but complementary reviews to strengthen IUCN's ability to adequately address livelihood-poverty-conservation issues. The first of these is a review of the social and economic sciences that IUCN needs to mainstream poverty-environment into the IUCN programme. This review started in August 2004, and a summary of work in progress was presented to the Programme Committee of the IUCN Third World Conservation Congress in Bangkok in November 2004. The present report contains the final version of the review.

The review builds on the IUCN 3I-C (Innovation, Integration, Information, Communication) project Mainstreaming Poverty Reduction at IUCN, undertaken in 2002-2004, as well as the 2004 IUCN Study on Capacity Building on Social, Economic and Gender Issues, to:

- examine in more depth what work is being done at project, programme and policy level within the various Commissions and the Secretariat, to identify how IUCN should improve the impact and influence of its work on the interface between environment and poverty;
- undertake a landscape analysis of what the state of knowledge is in the area of poverty-environment to strengthen IUCN's global policy work, programme and project work in the field, including work that is being done in the IUCN Commissions and the Secretariat;
- identify what additional expertise is needed and how it might best be organized into Advisory Groups, Task Forces or new institutional partnerships and with what terms of reference.

The review was coordinated by Gonzalo Oviedo, IUCN Senior Adviser on Social Policy, and prepared by Naresh C. Saxena, Nadine Speich and Paul Steele. Inputs and comments were received from a wide range of IUCN staff at Headquarters and in Regional offices, Commission members, and IUCN member and partner organizations.

The review is organized in five parts covering:

- state of the art knowledge of the global poverty environment debate
- IUCN's work on the poverty-environment links
- a case study from the South: poverty-environment issues and actors in Asia
- a case study from the South: poverty-environment links in West Africa
- a case study from the Swiss Agency for Development and Cooperation (SDC): poverty-environment experience from Swiss cooperation and research institutions.

IUCN is grateful to the team of consultants, who did a very professional and conscious work, and to the many colleagues within and outside IUCN, who provided valuable inputs and insights. The review would have been impossible without the generous support and active participation of the SDC.

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Abbreviations and acronyms

ADB	Asian Development Bank
AfDB	African Development Bank
APESS	Association pour la Promotion de l'Elevage en Savanne et au Sahel
BPCD	Biodiversity Policy Coordination Division
CAS	Chinese Academy of Sciences
CDE	Centre for Development and Environment, Institute of Geography, University of Bern
CEESP	IUCN Commission on Environmental, Economic and Social Policy
CGIAR	Consultative Group on International Agricultural Research
CNCR	Comité National de Concertation des Ruraux
CPR	Common property resources
DFID	Department for International Development (UK)
DGIS	Directorate-General for International Cooperation (Netherlands)
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FNGN	Fédération nationale des groupements NAAM
FOMACOP	Forest Management and Conservation Programme (Lao PDR)
GDP	Gross domestic product
GEF	Global Environment Facility
GNI	Gross national income
GPSE	Gender, poverty and social equity
HIPC	Heavily indebted poor countries
IAGU	Institut Africain de Gestion Urbaine
ICARDA	International Centre for Agricultural Research in the Dry Areas
ICT	Information and Communication Technologies
IIED	International Institute for Environment and Development
IRHA	International Rainwater Harvesting Alliance
IP	Individuals Projects (of the NCCR)
IWRM	Integrated Water Resource Management
JFM	Joint forest management
KRA	Key results area
MDG	Millennium Development Goals
MPCA	Medicinal Plant Conservation Area
NCCR	National Centre of Competence in Research North South
NEPAD	New Partnership for Africa's Development
NGO	Non-governmental organization
NRM	Natural resource management
NRU	Natural Resource and Environment Division of SDC
NTFP	Non-timber forest product
OECD	Organisation for Economic Co-operation and Development
OSS	Sahel and Sahara Observatory
PAF	Poverty Alleviation Fund
PPA	Participatory poverty assessment
PRS	Poverty reduction strategy
PRSP	Poverty reduction strategy paper
ROPPA	Réseau des Organisations Paysannes et des Producteurs Agricoles de l'Afrique de l'Ouest
SDC	Swiss Agency for Development and Cooperation
SEMRY	Rice Development Authority (Cameroon)
UNCCD	United National Convention for Combating Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WARDA	Africa Rice Centre
WHO	World Health Organization
WSSD	World Summit on Sustainable Development

Executive summary

The main findings of the review can be summarized under seven headings:

1. why the environment matters to poor people
2. tackling poverty and environment: the importance of politics and governance
3. how to achieve pro-poor environmental change
4. IUCN's current contribution to poverty environment
5. poverty-environment areas for greater IUCN engagement
6. knowledge and skills needed by IUCN for greater engagement in poverty-environment
7. changing the way IUCN does business to be more effective in addressing poverty-environment issues.

1. Why the environment matters to poor people

- Environment is central to the health, livelihoods and vulnerability of the poor.
- Many reports, most recently the Millennium Ecosystem Assessment, have highlighted the linkages between achieving the Millennium Development Goals (MDGs) and sustainably managing the environment.
- The health of poor people is detrimentally affected by lack of access to clean water and exposure to indoor and outdoor air pollution.
- The nutrition and health status of poor people is closely linked to natural resources. Examples include dependence on fisheries and aquatic resources for protein and the importance of water and other ecosystem services and agro-biodiversity for agriculture. In famines and times of drought, poor women and men often turn to wild plants and animals to make up their food security. The majority of the poor depend on so-called traditional medicines, which mainly make use of natural ingredients.
- Natural resources are vital to the livelihoods of the poor. The majority of poor people live in rural areas where they often depend on natural resources related to income generating activities such as subsistence agriculture, including livestock and harvesting of aquatic resources. Natural resources provide fodder, fuel, fibre, construction materials and manure. In general, the poorer the household the greater the contribution of natural resources to income, although less poor households often use a greater absolute amount of natural resources.
- Ecosystem change and natural resources are important determinants of the vulnerability of poor people. Low-income countries and poor households are often situated in areas most exposed to environmental disasters and are least able to cope with the effects of these disasters. Extreme weather events and long-term environmental change will be exacerbated by climate change.
- Natural resources are often linked to conflicts, both between and within countries, and understanding these conflicts can provide an entry point to conflict resolution. Conflicts can arise in the case of resource abundance through the so-called "resource curse" where countries that are richly endowed with natural resources such as minerals and timber can engage in unproductive conflict over access to these resources. There are also conflicts over

specific ecosystems. Conflicts can also arise in the reverse situation of resource scarcity, for example when land or water is limited and conflicts break out. Even within a single village or group of people, there will be many competing claims on natural resources, so the phrase "community" must be used advisedly and not romanticise the complexity of natural resource use.

- There are some cases when improved livelihoods and enhanced conservation are not necessarily coincidental and there are trade-offs. Indeed if win-wins were as ubiquitous as some suggest then it is not clear why the environment continues to degrade in so many ways. The IUCN Vth World Protected Areas Congress (Durban, 2003) highlighted many equity issues regarding the livelihood needs of the poor. There are ways that the poor can be compensated but it requires a rigorous and objective assessment of the costs and benefits, how these are distributed, and how inequitable distribution can be changed.

2. Tackling poverty-environment: the importance of politics and governance

- There are many ways to address poverty-environment issues and improve environmental outcomes that matter to poor people. However, it is becoming increasingly clear that it is necessary to address the underlying factors that drive environmental change. These include social, demographic, economic, institutional, governance and political processes.

- Of these underlying factors, it is perhaps the political, governance and institutional factors that are key. As the path-breaking Brundtland report of 1987 on Environment and Development concludes, "It could be argued that the distribution of power and influence within society lies at the heart of most environment and development challenges. Hence new approaches must involve programmes of social development, particularly to improve the position of women, to protect valuable groups, and to promote local decision-making in society."

- The growing focus on access and control of resources challenges the earlier emphasis on degradation and resource scarcity per se. Property rights and tenurial security that benefit poor people are vital to improved management of natural resources.

- Gender equity is central to the politics of environmental management.

- There has been a long history of political change, starting with colonialism that has negatively impacted on poor people's natural resource rights. Many resources are increasingly inequitably distributed with declining access to common property for the poor.

- Access to markets, credit and technology, which the poor need to generate wealth from natural resources, are often monopolised by the non-poor.

- State policies can also negatively impact on the poor by taxing the poor's use of natural resources, blaming the poor for natural resource degradation and limiting the access of the poor to natural resources.

3. How to achieve pro-poor environmental change

- There are ways to achieve pro-poor environmental outcomes. This requires gender equity, rights for poor people to natural resources and access to markets, credit, technology and knowledge.
- This can be achieved by pressure from below by poor people themselves, often supported by civil society, and the formation of alliances with progressive politicians, government, the private sector, civil society and, where appropriate, external development agencies.
- Some of the strongest environmental movements have emerged in the poorest countries. But their impetus and vision differ fundamentally from Northern movements. Environmentalism in the North relates to post-industrial values against a background of mass consumerism, uses formal channels and tends to have a single-issue ideology. By contrast, in many low-income countries environmentalism arose early on in the industrialization process from conflict with perceived destructive development processes. It uses direct action, is often based on traditional means of protest and existing social networks and responds to class conflict over ecological, human rights, ethnicity and justice issues.

4. IUCN's current contribution to poverty-environment

- IUCN's Mission is to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. The fulfilment of IUCN's mission requires the Union to effectively integrate key social and poverty issues in its work.
- IUCN's members, Commissions and Secretariat have played an important role in helping to encourage pro-poor environmental change through facilitation, leadership and knowledge generation.
- IUCN has undertaken innovative work mobilising poor people, forming alliances with progressive politicians, government ministries, civil society and the private sector and generating knowledge and information about how to achieve pro-poor environmental change.
- While parts of the IUCN network have been engaged in this task, there is much more that could be done, working with the full membership and the many engaged in this task outside IUCN. The task is enormous, but without change the poor will continue to suffer and the environment will continue to degrade.

5. Poverty-environment areas for greater IUCN engagement

There are many areas where IUCN could strengthen its role in driving and influencing pro-poor environmental change, including:

- empowering poor people and local organizations to drive change
- engaging and challenging political elites, government and the private sector
- supporting and challenging development agencies

- mobilising civil society and the media to focus on environmental outcomes that matter to the poor.

6. Knowledge and skills needed by IUCN for greater engagement in poverty-environment

- Knowledge and skills are needed by IUCN to improve its ability to engage on these issues. The main areas include strengthened expertise in political analysis, political economy, sociology, anthropology and economics.
- Many of these skills already exist within the IUCN membership, so a more strategic and thorough use of the membership should be instituted.
- Internal training should be introduced so that the entire senior and middle level staff is familiar with basic development paradigms and tools of political analysis (e.g. sustainable livelihoods, rights approach to development, institutional analysis, etc.).
- Recruitment and promotion should place emphasis on familiarity with the social sciences and development issues.
- IUCN should strengthen links with external networks that are engaged on poverty-environment issues, in particular civil society groups, development agencies and academia.

7. Changing the way IUCN does business to be more effective in addressing poverty-environment issues

- Improved knowledge and training is important, but not sufficient. IUCN also needs to change the way it does business to give a greater focus to rights, governance and to shift more from micro-level projects to facilitating the implementation of broader pro-poor environmental policies.
- The present resource allocation (both in terms of staff time and finances) in IUCN is heavily weighted in favour of micro-interventions, which may not bring lasting benefits to the poor unless combined with macro-level changes. As a result,
    - IUCN may be spreading its scarce resources too thinly
    - with limited funds only a few thousand can benefit whereas the number of poor runs into billions
    - as IUCN funds are small, senior government officials at the national level do not take any special interest in the projects funded by IUCN, so learning from such assistance is limited and is rarely scaled up.
- On the other hand, while more complex, the advantages of facilitating and enabling macro-level changes are many. IUCN would then be able to maintain an international perspective, with analysis that impinges upon the lives of millions, and would thus be able to provide intellectual leadership and direction to other non-governmental organizations (NGOs), donors and research organizations. Despite limited funding, IUCN has to be different from other environmental NGOs, and should have a broader perspective and lead others in concepts and vision, particularly in the vital area of poverty-environment.

Part 1: State of the art knowledge of the global poverty-environment debate

By Paul Steele

1.1 Summary

There is a growing array of work and experience on poverty-environment relationships, which is moving from advocacy to analysis of the pitfalls and complexities involved. IUCN needs to assimilate both the advocacy and analytical work if it wants to play a key role in making this approach operational among its own programmes and its constituent members. Already IUCN's 2005-2008 programme highlights the importance of poverty, social and equity concerns. This review assesses the growing body of poverty-environment research and experience to recommend how IUCN can operationalise a greater commitment to poverty reduction.

In mainstream development debates, the environment is not high profile, but it can be given greater prominence by making it relevant to other higher profile agendas. The most obvious of these agendas is poverty reduction, but also related concerns such as growth, governance and political change, globalization, and now increasingly conflict and security. Making environment relevant to these other agendas requires an ability to listen and not preach. It requires a willingness by IUCN to recognise that for poverty reduction, environment is rarely the number one issue, but it is highly important and often receives considerably less attention from developing country governments and development agencies than the importance attached to it by the poor themselves.

1.1.1 The changing international approach to poverty reduction and its implications for the environment and IUCN

The changing understanding of poverty, illustrated by the MDGs, allows clearer linkages to some aspects of the environment and ecosystems, but may require a change in terminology given the lack of reference to "conservation". The more holistic understanding of poverty has, through the MDGs and sustainable livelihoods approach, given more focus to environmental resources. A holistic view of poverty also leaves open the potential for greater synergy with the more holistic concept of ecosystems. The challenge is that IUCN may need to clarify its terminology to be able to engage more effectively with those outside "conservation" networks. In particular, the assumption by IUCN that conservation includes "sustainable use" is not understood by outsiders and gives the impression of an overly "protectionist" agenda. With the focus on the international MDGs, which make no mention of "conservation", but refer instead to "ensuring environmental sustainability" and "reverse the loss of environmental resources", it may be worth IUCN shifting more to this terminology, at least when engaging with the development agenda (see section 1.4.1).

The growing importance of in-country stakeholders and donor harmonisation for poverty reduction must be reflected by the environmental constituency, including IUCN. Development agencies are focusing on financing government agencies through national, sector and sub-national budgets while promoting transparency and accountability for public funds and outcomes. This results from concern by developing country governments and development agencies over the transaction costs and counter-productive incentives of separate "project" units. Donors in several sectors such as health and education are developing joint programmes with governments (in what are known as sector-wide approaches or SWAps). However, donor funded environmental programmes still remain very poorly coordinated. IUCN could play a more active role in the environmental constituency by providing support for integrating the environment in government-led processes, and promote more donor harmonisation in environmental programmes (see section 1.4.2).

The MDGs embody a greater commitment to measuring pro-poor outcomes and there is a growing debate about systems of poverty-environment indicators. IUCN can play a role in supporting the development and application of such poverty-environment indicators, and judge its performance in terms of such indicators. So that, for example, country offices in relevant countries are judged not by their funds raised or staff size, but their effectiveness in contributing to the MDGs and achieving pro-poor environmental outcomes (see section 1.4.3).

The poverty debate has highlighted the importance of strategic macro processes and decisions, so poverty-environment analysis needs to be relevant to these more generic decisions. The poverty debate is focusing on broad governance issues and general economic policies. By contrast, environmental analysis typically stresses location-specific details based on the particular ecological zone. While this may be scientifically precise since environmental generalisations can be misleading, this approach can leave environmentalists with little to contribute to macro-level decision-making. So while the poverty-environment literature grows in size and complexity, there is a need for some practical ways forward for decision makers especially to respond to macro-level policy debates. This would be a real value added that IUCN and its constituent members can provide (see section 1.4.4).

Recent concerns with poverty reduction have broadened to include pro-poor growth, to which natural resources can make a positive contribution. The growth debate has become more sophisticated. Natural resources are central to these debates and IUCN and others need to engage constructively to support low-income countries that are often desperate for growth (see section 1.4.5).

The mainstream development community has begun to focus more on pro-poor political change to achieve poverty reduction. While recognising the importance of governments in delivering pro-poor outcomes, the development community has become less naïve in assuming that all governments are focused on poverty reduction. Pro-poor political change matters for the environment, but it also works the other way – environmental issues and decisions can act as a catalyst for broader governance changes. This can open up the work of IUCN to a new constituency and move environment to the heart of the political debate (see section 1.4.6).

The debates over poverty, the environment and globalization are full of myths that need de-bunking. In general, the evidence suggests that exporters from developing countries often see environmental standards in industrialized countries as a non-tariff barrier to trade, that investment by industrialized country firms in developing countries is rarely driven by evading environmental regulations and that multinationals in developing countries are generally less polluting than state-owned enterprises in the same industry. IUCN with its members in both industrialized and developing countries could play a role in promoting a more evidence-based approach to the debate over globalization and the environment (see section 1.4.7).

The links between security, conflict and the environment are complex, but have been given prominence by the focus on terrorism and global security. There is evidence that natural resources have fuelled conflicts and climate change is a "security" threat, and IUCN can use this to engage with these politically powerful sentiments (see section 1.4.8).

Development agencies have made a number of commitments to the importance of the linkages between poverty and the environment and IUCN can play an important role in holding these development agencies to account and to operationalise these commitments in decisions about resources and staffing (section 1.4.9).

1.1.2 What is the relationship between poverty reduction and natural resources? Identifying poverty-environment dynamics

A growing body of work demonstrates that the poor depend heavily on natural resources – with the poorest households having the largest dependence as a percentage of their income, but the less poor having a larger dependence in absolute terms. These natural resources typically include fuel wood, wild foods and

fodder for animals. A recent review of 54 forestry studies found that these natural resources provide an average of 22% of household income (see section 1.5.1).

Poverty-environment issues have a clear gender dimension with declining resource availability such as water and fuel wood leading to increased time spent by women and children in collection activities (section 1.5.1).

Poverty-environment analysis highlights the complex linkages between natural resources and growth. In general, natural resources provide a "safety net" for the poorest, but it is not clear that they really provide a long-term route out of poverty. Macro linkages between natural resources and growth have shown to be complicated by the so-called resource curse, requiring political reforms to be overcome (see section 1.5.2).

Much poverty-environment literature is starting to develop a more complex analysis of poverty and household dynamics stressing heterogeneity (for example on gender lines) and existing conflicts among many resource users. This needs to be thoroughly reflected in IUCN's work on natural resource management (NRM) avoiding the sometimes naïve assumptions about harmonious "communities" (see section 1.5.3)

The linkages between poverty, environment and population are receiving some attention, but generalisations are difficult and often misleading. The fear of population growth has been tempered by those who have argued that higher population density can drive technical progress and other improvements. However, the larger impact of population pressure on NRM regimes and on agricultural extensification remains poorly understood. This could be an area where IUCN could promote further work (see section 1.5.4).

Health, poverty and natural resources is an emerging area, but also one where there is limited agreement. The debate is eclectic, addressing a number of related themes including the links with food security, agro-biodiversity, the wildlife and medicinal plant trade and the issue of wildlife-linked diseases such as avian flu. IUCN is starting to take a more active role in these debates (see section 1.5.5).

Vulnerability of poor households linked to natural resources is a key issue and will be exacerbated by global climate change. Natural resource dependence can be both a cause and a solution to vulnerability, so marginalized farmers will be more prone to periods of vulnerability, and during these periods will switch back to dependence on wild sources of income (see section 1.5.6).

Poverty and ecosystems linkages is a new area for analysis, but there seem to be some interesting potential linkages (see section 1.5.7).

1.1.3 Why is the relationship between poverty and environment the way it is? Understanding the underlying social, political and economic processes that link poverty and the environment

Poor people, particularly women, suffer from inequitable distribution and insecurity of resource access, which is being worsened by loss of access to common property and state lands. While there have been some gains in land reform over the last 50 years in some countries, and improved tenure, especially in urban areas, this is undermined by a growing erosion of common property and state owned natural resources by wealthier groups in many countries. In southern and eastern India for example, privatisation of land has led to 25-50% reduction in the extent of common property resources. The loss of state lands to wealthier groups, which were often de facto openly accessible to the poor, is facilitated by corruption, for example in the distribution of timber and mining concessions in many countries (see sections 1.6.1 and 1.6.2).

Wealthier groups also constrain the benefits the poor can gain from natural resources by their control of inputs (such as credit and water) and by monopolistic production chains. This is a problem common to marginal rural agricultural producers and it limits the returns from natural resource investments. IUCN

needs to work more constructively with other groups who have expertise in these areas to help overcome these challenges (see section 1.6.3).

Constraints on the poor's gains from natural resources are exacerbated by state policies including lack of investment in marginal rural areas, regressive taxation on poor people's natural resource activities and blaming the poor (often wrongly) for natural resource degradation. The latter issue is an area where IUCN should have comparative advantage to address by providing objective scientific advice and challenging anti-poor environmental regulations and enforcement (see section 1.6.4).

1.1.4 How can pro-poor natural resource outcomes be achieved? Identifying the drivers of change

This report argues that a growing body of research demonstrates that achieving pro-poor natural resource outcomes depends on pro-poor political changes. These can be achieved by a number of approaches but require IUCN to work in innovative alliances and coalitions with the poor themselves, other civil society groups, progressive political institutions and with development agencies (see section 1.7).

1.2 Introduction and objective of this review

1.2.1 Objectives

The overall purpose of this review is to identify ways in which IUCN can improve the impact and influence of its work on the poverty-environment links, including considerations of gender equity. This section will provide better understanding of the leading areas of research and practice globally in the area of poverty and environment. It will provide a landscape analysis of what the state of the art is in the area of poverty-environment to strengthen IUCN's global policy, programme and project work.

1.2.2 Approach

Poverty-environment, as with any important and controversial subject, is a large, complex and contradictory area. While there are some emerging areas of broader agreement, there are still many areas of disagreement. So providing a "consistent" summary of the state of the art is neither possible nor desirable.

Inevitably this overview is itself subjective. It will be biased both in the sources it selects and the conclusions it draws. This review draws primarily from two important, sometimes conflicting sources – development agencies and academic journals. The international development debate is led by the development agencies, such as the World Bank, UN agencies and the bilateral agencies, such as the UK's Department for International Development (DFID). Their inclusion in this review is justified, since – whether the reader likes or not – they often impact heavily on development debates in many countries and at the international level. In addition, these agencies are key funders and partners of IUCN in many areas. The second source of poverty-environment material is the recent, cutting edge academic work that is challenging simple generalisations about poverty and the environment. A growing body of anthropologists, economists and environmental lawyers among other professionals are now undertaking challenging research and applied work on poverty-environment issues. The key journals on the subject include *World Development*, *Development and Change*, and *Environment and Development Economics*.

1.2.3 Synopsis of the review

Section 1.3 identifies the current IUCN approach and proposed activities on poverty-environment. Section 1.4 reviews the changing international approach to poverty reduction and its implications for the environment and IUCN. Section 1.5 assesses the relationship between poverty and natural resources:

identifying poverty-environment dynamics. Section 1.6 addresses why the relationship between poverty and environment is the way it is and looks at the underlying social, political and economic processes that link poverty and environment. The final section concludes with how pro-poor natural resource outcomes can be achieved, identifying the drivers of change and areas where IUCN can engage to bring about change.

1.3 Current IUCN approach and proposed activities on poverty-environment

IUCN's Programme 2005-2008 "Many Voices, One Earth" provides an indication of current IUCN approaches and proposed activities. This programme is developed through 26 global "results" which are clustered into six "Key Result Areas" (KRAs). Three of these KRAs have a clear relevance to poverty, although the terms social and/or equity are used.

- KRA 2 on Social Equity is that IUCN "will promote better understanding of the role of **social equity** in biodiversity conservation" where social equity is defined as the "right of everyone to enjoy a rewarding quality of life".
- KRA 4 on International Agreements, Processes and Institutions is that IUCN will "promote and support effective, efficient and **equitable** environmental governance at regional and global levels".
- KRA 5 on Ecosystems and Sustainable Livelihoods is that "IUCN will apply the knowledge generated in KRAs 1, 2, 3 and 4 to promote sustainable and efficient management of ecosystems, integrating **social**, economic and environmental aims at local, national and transboundary levels".

A detailed review of the 26 global key results shows that most of the other KRAs include poverty related issues.

- Improved understanding of the interdependent nature of **social equity** and biodiversity conservation, 2.1K (e.g. persuading national governments to recognise the role of indigenous peoples and local communities in establishing and managing protected areas).
- Tools and methods are available to mainstream **social equity** in biodiversity conservation and sustainable use policies and practice, 2.2K (e.g. methods and tools to measure the livelihood impacts of sustainable use policies and practices).
- Improved understanding of how markets, institutions and **socio-economic forces** create incentives or disincentives for the conservation and sustainable use of biodiversity, 3.1K.
- Tools and methods are available to assess trade-offs between economic, **social** and environmental values, 3.2K.
- Improved understanding of how international arrangements can support more efficient, effective and **equitable** biodiversity conservation and sustainable development, 4.1K.
- Improved understanding of how **social**, economic and environmental objectives can be reconciled in the management and restoration of ecosystems, 5.1K.
- Stakeholders make informed choices and negotiate outcomes that balance biodiversity conservation and **human development needs**, 5.3K.
- National and sub-national policies, laws and institutional arrangements better integrate **human well-being** with biodiversity conservation, 5.4 K (e.g. IUCN country level policy

work fully reflects social policy concerns, with a primary focus on social equity, poverty and rights).

- Government structures take into account the rights, responsibilities and interests of stakeholders and allow for their **equitable participation** in decision-making regarding biodiversity conservation and human development, 5.5K (e.g. taking into account the rights and interests of women in local governance structures).

- Programme development – IUCN's Programme is developed in response to contemporary needs for conservation action and lessons learned, 6.3K (e.g. cross-cutting initiatives on emerging thematic and geographic issues, for example enhancing the linkages between **poverty reduction** and conservation)

The extent to which these poverty-focused results have been picked up by IUCN's regional programmes, thematic programmes and commissions is mixed, but there is some evidence of their use (Mehrotra, 2004).

The intellectual framework of IUCN's approach to poverty-environment is identified in the Programme 2005-2008: "Poverty reduction is a key element of today's global agenda. The relationship between economic growth, poverty, inequities and environmental degradation is complex. In some cases, economic growth, poverty and inequities can cause environmental degradation. In other cases, environmental degradation can exacerbate poverty and inequity. One factor to consider is scale. At a global level, affluent societies are responsible for greater environmental impact than less affluent societies. The environmental footprint of affluent societies is much larger, not only in terms of the amount of resources they consume but also in the way their consumption patterns stimulate demands that result in negative environmental impacts, often in less affluent locations.

Conversely, the environmental impacts of the poor are mostly local, resulting from their dependence on locally available resources. While the impact of poor societies on the environment can be locally significant, it is far less important as a determinant of environmental degradation at a global scale than the impact of affluent societies. Development assistance can affect the environment in the countries targeted yet environmental concerns have not been fully integrated so far into the way national poverty reduction strategies (PRSs) have been implemented."

"While IUCN supports the new focus of international cooperation on poverty, it stresses that a healthy environment is essential to securing long-term improvement in livelihoods. So it welcomes the growing recognition that poverty reduction efforts need to address the multi-dimensional character of human well-being, including environmental quality."

"The new poverty agenda challenges IUCN and its members to demonstrate the importance of ecosystem services for reducing poverty and promoting sustainable development. To take up this challenge means fine-tuning rather than radically changing IUCN's work."

This analysis of the IUCN programme with its greater emphasis on poverty issues is an important first step. The following sections will present recommendations to take this forward to "demonstrate the importance of ecosystems for reducing poverty". First the changing international approach to poverty reduction is assessed.

1.4 The changing international approach to poverty reduction, and its implications for the environment and IUCN

Over the last decade, there has been a significant change in the approach to poverty reduction. These changes present great opportunities but also risks for the environmental community and the role of IUCN. This section reviews these changes under eight major headings:

- the changing understanding of poverty
- the changing role of government and donors in poverty reduction
- measuring progress in outcomes – the MDGs
- poverty reduction linked to strategic macro issues
- the importance of pro-poor growth
- supporting pro-poor political change
- harnessing the benefits of globalization and addressing industrialized country policies
- poverty reduction, conflict and the security agenda.

1.4.1 The changing understanding of poverty

Low income is central to being poor. However, poverty is increasingly associated with other deprivations – lack of educational opportunities, gender inequities, ill-health and lack of environmental assets. The poor themselves define their own situation as exposure to risk and vulnerability; lack of opportunity, political marginalization and lives empty of hope (World Bank, 2002a). This changing view of poverty has coincided and been hastened by the widespread use of qualitative studies using participatory poverty assessments (PPAs) to determine the views of the poor (World Bank, 2002a). These are now undertaken in most low-income countries at regular intervals, often with funding from the major development agencies.

Some of these different aspects of poverty have been identified in the MDGs, covering absolute incomes, access to education, gender equity, reduced child mortality, improved maternal health, reductions in major diseases and reversing the loss of environmental resources. This more complex interpretation of poverty is also embodied in the World Bank's focus on "opportunity, empowerment and security" (World Bank, 2001) and the sustainable livelihoods framework, which identifies five different kinds of capital upon which the poor depend.

The changing view of poverty and the environment

A recent review found that the environment is, in some cases, highlighted by the poor as a key issue (Brocklesby and Hinshelwood, 2001). However, the lack of pertinent environmental questions may lead to an under-estimation of the importance of the environment to poor people. Recent examples, such as the PPA in Pakistan where environmental questions have been more carefully included, have revealed a strong focus on the environment (Pakistan Planning Commission, 2004). This has led to a more sophisticated understanding of why and how the environment matters to poor people.

Implication for IUCN of the changing view of poverty

The benefits for IUCN and its members of the more holistic and complex interpretation of poverty instead of the pure income definition is that it allows a clearer demonstration of the importance of the environment, and indeed ecosystems, for poverty reduction. For example, the links between the environment and health are being increasingly demonstrated, while environment factors are often a major cause of vulnerability for the poor. The sustainable livelihoods approach explicitly includes "natural capital" as one of its five types of capital upon which the poor depend. This more holistic approach to poverty reduction may also allow synergies with the more holistic approach to natural resources of the ecosystem approach that IUCN is now encouraging (see subsequent sections).

One of the challenges for IUCN is that this debate about poverty reduction makes no reference to "conservation", although indicators on forest cover and protected areas are included as MDG7 indicators (see Table 1.1). So IUCN may need to clarify its terminology to be able to engage more effectively with those

outside "conservation" networks. In particular, the assumption by IUCN that "conservation" includes "sustainable use" is not understood by outsiders and gives the impression of an overly "protectionist" agenda. With the focus on the MDGs that make no mention of "conservation" but refer instead to "ensuring environmental sustainability" and "reverse the loss of environmental resources", it may be worth IUCN shifting more to this terminology stressing the "environment" rather than "conservation".

Key references:

- Brocklesby and Hinshelwood (2001) *Poverty & the Environment: what the poor say?* DFID (summary available at www.dfid.gov.uk/pubs/files/epd_keysheet1.pdf)
- Pakistan Planning Commission (2004), Participatory Poverty Assessment
- World Bank (2002) *Voices of the Poor*, edited by Deepa Narayan
- World Bank (2001) World Development Report, Attacking Poverty
- www.undp.org/poverty
- www.worldbank.org/socialdevelopment
- www.livelihoods.org/

1.4.2 The changing role of government and donors in poverty reduction

The international debate about poverty reduction and poverty-focused growth is placing considerable emphasis on the role of in-country stakeholders, particularly governments, in delivering MDG outcomes that benefit the poor. There is much emphasis on what is termed "country ownership" although the reality behind the rhetoric is often more limited. There is nonetheless a realisation that governments do have a key role to play in setting a strategic agenda for how poverty reduction and growth can be achieved. This is illustrated by the international community's focus, particularly in low-income countries, on so-called poverty reduction strategy papers (PRSPs), which are intended to be government-led strategies that involve other key stakeholders in identifying costed priorities for poverty reduction. Originally intended to be financed by heavily indebted poor countries (HIPC) debt relief, many other agencies including the World Bank, IMF and some bilaterals are linking their financing to the implementation of these PRSPs.

Part of the drive towards this approach is the concern of many governments and development agencies that both externally imposed structural adjustment and stand-alone aid projects have had a very mixed record of success, especially in the poorest countries. There has been a growing realisation that the whole paraphernalia of projects with their separate staff, vehicles, project cycle and review missions etc. often distracted from longer term institutional development. To take an extreme example, donors provided more than 20 projects to the Tanzanian Ministry of Health – each with its own unit, staff, uncoordinated project cycle, demands for counter-part funds and staff – and then wondered why the Ministry had no time to develop a coordinated health strategy.

So as well as focusing on developing government efforts towards poverty reduction, one of the other aims of PRSPs is to provide a coherent framework for donors to provide more predictable, coordinated finance. Donors have now agreed concrete steps in what is known as the Rome harmonisation process, under the auspices of the OECD's Development Assistance Committee, to improve their joint working in support of country stakeholders. In many sectors this has led to joint donor funding being channelled to the implementation of sector strategies, especially in health and education. Unfortunately, however, environmental programmes remain one area where donor harmonisation remains quite limited.

Implications for the environment constituency and IUCN of the new approach of governments and donors to poverty reduction

The rise of PRSPs to focus government and donor efforts presents two new opportunities for IUCN. Firstly, there needs to be greater support for environment-related government agencies and domestic civil society groups to engage in the development and implementation of PRSs and related sector strategies.

Secondly, there can be a greater role in promoting donor coordination in the environment sector. However, these new roles for IUCN also present challenges to the way some IUCN country offices go about their business at present. IUCN needs to move away from traditional stand-alone projects towards strengthening government led processes and encouraging donor coordination.

1.4.3 Measuring progress in outcomes – Millennium Development Goals

The focus on MDGs embodies a desire by the international community to focus more on outcomes, and specifically outcomes that benefit poor people. This has arisen out of a concern that these outcomes, such as higher incomes and reduced mortality, have not improved sufficiently. It may also reflect a frustration that less measurable objectives such as economic growth, participation or even perhaps sustainable development have not translated clearly enough into results on the ground. In this sense, the MDGs focus on ends rather than means – on what should be achieved rather than the process of achieving it. This distinction between ends and means is not entirely clear-cut since some MDGs – such as MDG8 of "improved partnerships" – are themselves means. The pendulum has also started to some extent to swing back towards "means" in the growing emphasis on "good governance". There has also been a realisation that in many cases changes in outcomes are longer term and often hard to attribute, so in the shorter term there is value in some intermediate indicators for key interventions or activities (e.g. improved access to sanitation) that will improve long-term outcomes. However, in general the MDGs demonstrate a concern that some development paradigms, including perhaps sustainable development, have become so "process-focused" that they need to become more "outcome-orientated" with clear measurable goals and targets.

MDGs and the environment

Within the environmental community, this focus on the MDGs has been largely welcomed. However, the environment community faces problems interpreting MDG7. The first target within MDG7 (see Table 1.1) includes a qualitative component to "integrate the principle of sustainable development into country policies and programmes" that is not clearly understood. In addition, there are concerns that some of the other targets chosen for MDG7 are not clearly enough linked to poverty reduction (World Bank, 2003a). This has led to debates about what have become known as poverty-environment indicators (Shyamsundar, 2002; Nunnan et al., 2002) or indicators that specifically measure pro-poor environmental outcomes. The objective of this approach is to demonstrate that environmental interventions can contribute to the achievement of the other MDGs, and not just MDG7, for example through improvements in environmental health or reduced income poverty by improved access to natural resources.

Table 1.1 MDG7 – ensuring environmental sustainability

Targets	***Indicators***
Integrate the principles of sustainable development into country policies and programme and reverse the loss of environmental resources	• Proportion of land covered by forest • Land area protected to maintain biological diversity • Per capita CO^2 emissions and consumption of ozone depleting substances • Proportion of population using solid fuel
Halve by 2015 the proportion of people without sustainable access to safe water	• Proportion of people with sustainable access to improved water source and adequate sanitation
Achieve by 2020 a significant improvement in the lives of at least 100 million slum dwellers	• Proportion of households with access to secure tenure

The MDG debate and IUCN

This MDG debate is highly important for IUCN in several ways. On the latter issue of poverty-environment indicators, it provides an area where IUCN can add value to the debate. But more operationally, the fact that MDGs focus on outcomes rather than processes does pose some challenges to the way IUCN conducts its business. IUCN programmes, as with many agencies, tend to focus on inputs and processes and be rather less specific on outcomes. An example is IUCN's Global Programme, the result areas of which are "understanding", "management" and "governance", but with almost no mention of actual environmental outcomes, let alone poverty-environment outcomes. While this may be more realistic and honest, it does raise concerns that, without outcome, even as a long-term guide, IUCN will not be able to respond to a more outcome-orientated international context, and processes can become ends in themselves.

Key References:

- Shyamsundar P. (2002) *Poverty-environment indicators*, World Bank
- Nunnan et al. (2002) *Poverty environment indicators*, DFID
- World Bank (2003a) *Poverty Reduction strategies and the Millennium Development Goal on Environmental Sustainability* (2003)
- UNDP (2003) *Human Development Report, Achieving the MDGs*, Oxford University Press

1.4.4 Poverty reduction linked to strategic macro issues

In addressing the challenge of poverty and the failures of past interventions, greater focus is being placed on the macro-level issues of the economy and political structures. There is a realisation that poverty reduction is much more than just spending more money on health and education, although these remain important. It means improving the political and economic context that poor people face. It means making sure that trade, investment and banking decisions benefit poor people, or at least do not make them worse off. It means providing poor people in the rural economy with improved access to markets, and the urban poor with improved tenure and access to infrastructure. It also means facilitating the many choices that poor people make to improve their livelihoods through internal migration and international remittances since estimates have shown that remittances are now twice the size of official development aid flows and may be better targeted to the poor. It means pursuing public sector reform, decentralisation and anti-corruption reforms in ways that promote poverty reduction. Many of these decisions and reforms depend on history and culture, and are the subject of ongoing social and political struggles. But the development community is now more aware of this context, and decision makers in developing countries, civil society and the staff of development agencies are increasingly engaged in debates about a country's strategic priorities.

Macro choices and the environment

This poses a challenge for both developing country natural resource managers and environmental staff in civil society and development agencies. Traditionally the environmental debate has been polarised between simple but often inaccurate generalisations and those who focus on the location-specific, contextual solutions to natural resource problems (Leach and Mearns, 1996). The challenge is that, while environmental myths have been dangerous, there is a need to provide decision makers with some more general environmental guidance to ensure that the environment and natural resources are not left out of these strategic debates (although there are many occasions when resources such as land and water are central to political struggles – see more later).

Role for IUCN in contributing to the debate over strategic macro-level issues

IUCN has to help find solutions to the challenge of responding to macro-level agendas while being rooted in the reality of complex poverty-environment relationships. One problem is the lack of historical information on ecological change. However, evidence suggests that data is available if time is taken to look for it – including through careful oral histories of local people. There is a growing body of poverty-

environment research that does allow some useful generalisations to be drawn, and several recent publications have attempted to synthesise this (DFID et al., 2002; Reardon and Vosti, 1995; OECD, 2000). This research needs to be brought to the attention of macro decision makers and this would be a valuable service that IUCN could provide.

Key References:

- Leach M. and Mearns R. (1996) *Lie of the Land, challenging received wisdom on the African environment.*
- Reardon T. and Vosti S.A. (1995) *Links between rural poverty and the environment in developing countries: asset categories and investment poverty,* World Development, Vol. 23, No 9, pp 1495-1506
- DFID, EC, UNDP and World Bank (2002) *Linking Poverty Reduction and Environment Management: Policy Challenges and Opportunities* (available at www.dfid.gov.uk/pubs/files/epd_linking_poverty.pdf)

1.4.5 The importance of pro-poor growth

One of the strategic issues increasingly being debated is the relationship between economic growth (in terms of increasing GDP per capita) and poverty reduction (as measured by an increase in the per capita income of the poorest share of the population, or some reduction in the number of people below a set level of per capita income). Very crudely, the traditional focus on growth in low-income countries has been replaced in most development agencies by more explicit emphasis on poverty reduction. Although recently the pendulum has started to swing back slightly with some emphasising so-called "pro-poor" growth. The latter phrase echoes the debates of the 1970s when there were calls for "growth with equity".

Pro-poor growth, natural resources and the environment: a role for IUCN?

This focus on growth creates a number of challenges for environmentalists. First and most fundamentally, if they want to engage in this debate they need to move away from the sole focus on the environmental damage from growth in terms of increased pollution and demand for natural resources. These environmental constraints to growth are a valid concern, but they are often not helpful for low-income countries that are desperate for growth, and they tend to add to the perception of environmentalists as those who object rather than provide constructive advice. An important approach – and one that is not just a semantic difference – is to demonstrate how improved environmental and natural resource management can contribute to pro-poor growth. To date most economists have approached this issue by focusing on the most profitable extraction rate for a given non-renewable or renewable resource. There has also been more macro-analysis of the optimum savings rate of investment in natural resource extraction. However, this work tends to be primarily theoretical with limited reference to the missing markets of many developing countries. There is now a growing body of work that seeks to address this gap of how natural resources can contribute to pro-poor growth in developing countries. This is a key area where IUCN could contribute and is elaborated further in later sections.

1.4.6 Supporting pro-poor political change

Combined with the greater emphasis on the role of government in poverty reduction, the development community is now applying a more sophisticated analysis of politics. Past complaints about "lack of political will" in a low-income country have not proved helpful, nor has simple hectoring about the need for "good governance" (Grindle, 2003). It is becoming well understood that political changes are needed to overcome the obstacles and remove the incentives that prevent poverty reduction – and in some countries these changes have occurred.

Social activists have long identified this political dimension, but it is now being publicly supported by the mainstream development agencies. However, while the emerging consensus is that governance matters, there is much less agreement about how good governance arises. What causes some governments to

promote poverty reduction and others to ignore the needs of the poor, or even undertake wholesale theft of state resources? Why is it so difficult to move from local empowerment of poor people to political mobilization? Why, despite public anger, do corrupt politicians get re-elected? (DFID, 2001). To answer these questions, we must first understand more about what constitutes pro-poor political change.

According to some, democracy is linked to poverty reduction, but multiparty democracy is no panacea (DFID, 2001). India has been a functioning democracy for 50 years, but poverty remains widespread in many states, while China and many of the East Asian tigers were not democratic and yet achieved major reductions in poverty (Moore and Putzel, 1999). This suggests that more important than formal systems of governance is to identify the patterns of state, society and market relationships that underpin governance systems and determine whether they provide outcomes that reduce poverty (DFID, 2003a).

Most industrialized countries have undergone long and often violent transitions in developing their current governance systems. There is no blueprint and each country will follow a unique path based on its past history, although a number of patterns can be identified that are important for pro-poor governance. Once basic security is achieved, the kind of political change that would benefit poor people is a move from informal, personalized patronage systems to systems in which poor people can expect universal services by right. State provision is no longer dependent on access to politicians and senior public servants who provide these services in return for support or because of personal or cultural relationships (e.g. ethnicity or caste). However, this transition also has risks and the poor may lose out in the short run as patronage systems provide safety nets to some by providing jobs in state institutions or facilitating access to some state services.

The next question is how do these changes arise, i.e. how does this pro-poor political change take place? Here there is still not a great deal of clear agreement or a general trend. In some cases, such as the rise of trade unionism in Western Europe and social conflicts in many countries, it has been the result of pressure from below. In other cases the rise of ideologies such as socialism have placed, at least in some respects, an emphasis on poverty reduction, as in China. There have also been particular historical factors such as the fear of communism in East Asia that made leaders more sympathetic to demands by marginalized groups.

Politics and the environment: how natural resources can trigger pro-poor political change

There is now a growing body of work that analyses how the political and governance forces impact on the way resources are managed; this is reviewed at length in later sections. There is also growing evidence of environmental issues as an entry point for broader governance reforms. The advantage of IUCN demonstrating environment as an entry point for broader political reforms is that it helps make environmental issues of interest to a wider constituency and brings the environment into the heart of the debate about governance and politics.

Key references:

- DFID (2003a) *Better Government for Poverty Reduction: More Effective Partnerships for Change*.
- DFID (2001) "Understanding pro-poor change: a discussion paper", internal issues paper, Sue Unsworth.
- Moore, M. and Putzel, J. (1999) "Politics and poverty", a background paper for the World Development Report 2000/1, September 1999.
- Brown, Schreckenberg, Shepherd and Wells (2002) *Forestry as an entry point for governance reform*, ODI Forestry Briefing, No 1, April 2002.

1.4.7 Harnessing the benefits of globalization and addressing industrialized country policies

The debate over globalization in the last decade highlighted the so-called "inter-connectedness" of the world. The narrow definition of globalization includes the increased movement of goods around the globe as trade, the increased movement of funds (or capital) and the speed and declining cost of communications that make this global movement possible. A broader definition of globalization would include the movements of people around the globe, although compared to goods and capital this is much more limited and is much lower now than it was in the early 20th century. A broader definition might also include the rise of global environmental problems, including both the loss of global biodiversity and the changes to the earth's climate system due to greenhouse gas emissions and globally linked land use changes.

Many of these globalization processes – for example trade flows, capital movements and emissions of greenhouse gases – are largely dominated by industrialized countries. In this context, there is a realisation among many in the development community that the industrialized countries need to do more to make globalization work for poor countries, most obviously by opening up their markets to developing country products.

Environmental issues and globalization

There are many environmental myths surrounding globalization, which the empirical evidence does not generally bear out. Both on trade and investment, many of the views of industrialized country environmental campaigners are debatable. For example, environmental standards on imports into industrialized country markets are often perceived by many developing countries as a form of non-tariff barrier. This is tempered by a realisation that, in some cases, environmental certification can create new markets and that some of the standards may be an inevitable result of consumer and regulatory pressure that developing countries have to accept. However, these standards are often resisted by developing countries, and often most affect the smallest producers in low-income countries who lack the skills and finance to comply. Similarly in investments, the so-called "pollution haven" hypothesis that industrialized firms send dirty industries to developing countries to take advantage of lax environmental standards is not generally borne out by the evidence. Typically, except for a few industries, environmental costs play a small role in relocation decisions compared to the costs and skills of the labour-force and access to markets. Finally, the view that multinationals account for greater environmental damage is generally not borne out by the evidence. Generally the worst polluters in developing countries are loss-making state industries who lack the funds, technology and legal threats to clean up, and in general multinationals in the same industry have a better track record. IUCN with its membership in both the North and South could play an important role in challenging some of these environmental myths around globalization.

1.4.8 Poverty reduction, conflict and the security agenda

One obvious new challenge of globalization post 11 September 2001 is the "globalization" of terrorism. While there is much rhetoric about global poverty reduction by industrialized country leaders, and attempts by development agencies to put this into action, often the foreign policies of industrialized countries include many objectives other than poverty reduction. During the 1960s and 1970s when the fear of communism was the dominant concern of the rich countries, this shaped foreign policy, military and humanitarian interventions and aid budgets. The new concern in rich countries after the events of 11 September 2001 is the spread of international terrorism. This overriding concern is now influencing spending priorities and leading to support for some regimes over others. Some have tried to use this security debate to focus on so-called "failing states", many of which are in Africa, to argue for a more pro-poor focus on conflict resolution (DFID, 2004a). There have been some successes such as the significant increase in the US aid budget, or the push – to use the example of the Iraq debt write-off – to lead to a broader debt write-off for low-income countries. However, to date the main effect of international terrorism concerns has been major increases in spending on countries such as Iraq and Afghanistan accompanied by general increases in military and security spending. Encouragement to low-income countries in Africa and South Asia to reduce

poverty as a way of improving global security remains limited, so the jury is still out as to whether the new focus on security and failing states will benefit poverty reduction.

Environment, conflict and the security agenda

Realising the dominant political concern with "security", environmentalists, particularly in the US, have, like others, sought to make the link with "environmental security". Even those outside the environmental movement have used security language to demonstrate the importance of the environment. For example, UK Ministers have declared that the major long-term threat to security is global warming. There has also been a growing reference to the links between environment and conflict. The obvious centrality of oil in the Middle East conflict is well recognised by many. There are also many examples, particularly in Africa and to some extent South East Asia, where natural resources – primarily minerals and timber – have fuelled conflicts (Global Witness). It remains to be seen if these links between the security and environment agendas make any difference to the way resources are managed.

Key reference: Global Witness (www.globalwitness.org)

1.4.9 Conclusions: engaging with the mainstream agenda, but also holding governments and development agencies accountable for their own environment rhetoric

This section has demonstrated that to engage with the broader development community there is a need to show how the environment is relevant to the changing thinking about poverty and poverty reduction. However, many of the major development agencies have also gone on record stating that environmental issues are important for poverty reduction and more needs to be done to address this (DFID, EC, UNDP and World Bank, 2002). Reviews of the main development agencies have frequently found that their poverty-environment rhetoric has not matched their actual delivery in terms of spending decisions and policy advice. Organizations with an international reputation, such as IUCN, have a powerful role to play in communicating with the heads of these agencies and senior staff and holding them accountable to implement their own recommendations.

1.5 What is the relationship between poverty reduction and natural resources? Identifying poverty-environment dynamics

The previous section placed poverty-environment issues within the broader debate over poverty reduction. Many of these linkages between the environment and these broader themes of poverty, growth and politics will be analysed in more detail here in order to more closely draw out the current thinking on the relationship between poverty reduction and natural resources.

1.5.1 Generally high dependence of poor men and women on natural resources

Resources are vital for the subsistence needs of the poor, for example in Zimbabwe (Cavendish, 1998) and India (Jodha, 1990). This is particularly true for women and sometimes children for whom declining resource availability increases time for collection (Whittington, 1990; Thapa et al., 1996). It has

been estimated that common property resources provide about 12% of household income to poor households in India. These common property resources include essential items for personal use and sale, including food, fodder, fuel, fibre, small timber, manure, bamboo, medicinal plants, oils, material for houses and furniture etc. These resources are gathered from areas over which no one individual has exclusive rights, such as village pastures, community forests, wastelands, common threshing grounds, waste dumping places, watershed drainage, village ponds and small reservoirs (known as tanks) and riverbeds.

In general, the poorer the household the more important is the contribution of common property resources. As a result, common property resources contribute to rural equity (Beck and Nesmith, 2001; Vedeld et al., 2004). Natural resources play a key role as a form of safety net in times of economic decline and when other food supplies are constrained. In south-eastern Ghana, recession and drought in 1982-1983 coincided with the pre-harvest lean season. During this lean season, the poorest households depended on the "bush" for 20% of their food-intake, compared to the bush sources providing only 2% of the food intake for the least poor households. Women and children in particular relied on wild products such as roots, fibres, leaves, bark, fruit, seeds, nuts, insects and sap (Dei, 1992).

Poverty-environment issues have a clear gender dimension with women more affected by declining resource quality and resource access. Two thirds of the people living in extreme poverty on less than US$ 1 a day are women. Declining resource availability such as of water and fuel wood have led to increased time spent by women and children in collection activities. One analysis of the views of poor people themselves states: "often local people talked of the appalling trade-offs they were forced to make in order to save time, such as knowingly taking water from an unsafe but closer water supply rather than walking further to clean water supplies (Brocklesby and Hinshelwood, 2001). Women suffer headaches, fatigue and pains in the chest, neck and waist due to carrying water over long distances. In general, women are particularly dependent on natural resources for their livelihoods, yet face more restrictions on access to these resources. In western Bengal, three times as many women as men were involved in gathering non-timber forest products (NTFPs). Processing of these resources was done entirely by women, and twice as many women as men were involved in marketing NTFPs (Ford Foundation, 1998).

Key references:

- Cavendish, W. (2000) *Empirical Regularities in the Poverty-Environment Relationship of African Rural Households*, WPS 99-2, Centre for Study of African Economies, UK.
- Jodha (1990) "Rural common property resources: contributions and crisis" in *Economic and Political Weekly*, June 30, A65-A78.
- Vedeld, P., Angelsen, A., Sjaastad, E. and Kobugabe Berg, G. (2004) *Counting on the Environment, Forest Incomes and the Rural Poor*, World Bank, Environmental Economics series, paper No 98.
- Whittington et al. (1990) "Calculating the time spent collecting water: some estimates for Uganda, Kenya" in *World Development*, Vol. 18, No 2 pp 269-280.
- Thapa, K.K., Bilsborrow, R.E. and Murphy, L. (1996) "Deforestation, land use and women's agricultural activities in the Ecuadorian Amazon" in *World Development*, Vol, 24, No 8.

1.5.2 Natural resources and poverty focused growth

Earlier sections have highlighted the importance of understanding the role of natural resources in contributing to pro-poor growth. While natural resources provide livelihoods for the poor, it is more complex to use these resources to generate incomes to lift people out of poverty and contribute to pro-poor growth. In general, natural resources provide a "safety net" for the poorest and are vital to their health, but it is less clear that they really provide a long-term economic route out of poverty (Angelsen and Wunder, 2003; Campbell et al., 2002). Indeed it is the very subsistence nature of these activities, such as small-scale fishing, grazing and NTFP harvesting and processing that allows the poor to undertake them. The technology is low cost, but the low density of the resources often means that profit margins are also very

low. One solution is to raise the returns from such activities although, paradoxically, adding value may actually encourage the non-poor to engage in these activities and reduce opportunities for the poor. For example, successful schemes in establishing fishing property rights can marginalize poorer fishers who do not have access. Or commercialising NTFPs can lead to a breakdown of common property arrangements and an increase in private property (Neumann and Hirsch, 2000). This is not to say that pro-poor natural resource based growth is impossible, only that it is not automatic.

In addition to raising returns from subsistence activities, natural resource rich countries can use the profits from these resources to generate revenues for pro-poor investments (OECD, 2005). But macro linkages between natural resources and growth have shown to be complicated by the so-called "resource curse" that requires political reforms to be overcome (Auty, 2001 and 2004). Examples of countries that face this challenge are the mineral wealthy countries of Nigeria and Papua New Guinea, the forestry wealthy countries of Cameroon and Cambodia, and the fishery rich countries of Mauritania and the Pacific Islands. While some countries have fallen into the resource curse and failed to invest this natural resource wealth in pro-poor growth, there are other countries that have successfully used this wealth to stimulate growth for poverty reduction. This can either be done by taking the revenue from natural resources into the general Treasury and investing it in poverty reduction, or by earmarking certain natural resource revenues for marginalized groups – often those living near the resources themselves. Kuwait is a relatively successful example of the former, with oil revenues used for poverty reduction through the general budget. There is public provision of many services, including vital water supplies in the desert climate. In addition, Kuwait has one of the most generous financial support schemes for low-income families (Sen and Dreze, 1989).

Not only have governments failed to invest the resource rents, they have also overused the resource base. In many countries a focus on rapid resource extraction, often with state subsidies, has led to boom and bust growth. Examples include Ghana's forests (from the 1960s to 1980s), Peru and Chile's fishing industry (in the 1970s), Bangladesh's shrimp farming (in the 1980s) and groundwater in western India today.

Addressing these shortcomings requires reconciling growth, poverty reduction and resource management objectives in a political context where vested interests may oppose progressive reforms. Timing is crucial to try to shift from pure resource extraction to resource management before it is too late. To be successful, coalitions for change are needed to drive the reform process. There are many examples of such coalitions that have included the poor themselves, civil society, an enlightened private sector and international donors. Examples include the creation of extraction reserves in Brazil, greater rights for subsistence fishers in Kerala (India), the recent push for certification of shrimp farming in Bangladesh, Namibia's nature conservancies, and groundwater recharge movements in western India. Donors, such as IUCN, can play a role in supporting and facilitating these coalitions for change.

Key references:

- OECD (2005) *Environmental Fiscal Reforms.*
- Auty, R. (2001) *Resource Abundance and Economic Development*, Oxford University Press.
- Auty, R. (2004) "Patterns of resource extraction and deployment in developing countries: implications for governance, economic policy and performance", presented at the Poverty Reduction and Economic Management (PREM) seminar, World Bank, Washington DC, April 27, 2004.

1.5.3 More complex analysis of poverty and household dynamics that highlights the "myth" of homogenous communities, for example in terms of gender disparities

Much analysis stresses the heterogeneity (for example on gender lines) and existing conflicts among many resource users. Studies have been set up to define the most effective institutions for collective NRM (Baland and Plateau, 1999; Ostrom, 1996). One important ingredient is to ensure that the schemes are profitable for the poor and do not impose high costs in terms of attending meetings instead of their normal

income generating activities (Sumalde and Pedroso, 2001). Recent reviews have challenged simple notions of community and highlighted gender, income, caste and other factors which can limit collective action even within a small location (Agarwal and Gibson, 1999; Roe et al., 2000). This needs to be thoroughly reflected in IUCN's work on NRM and the sometimes naïve assumptions about harmonious "communities".

Key references:

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- World Bank participation website: www.worldbank.org/participation.
- www.worldbank.org/poverty/empowerment.

1.5.4 Population, poverty and the environment

The linkages between population, poverty and the environment in low-income countries are receiving some attention, but generalisations are difficult and often misleading. Concern over the impact of population growth on the environment was a major issue in the early 1990s; Indonesia had a joint Ministry for Population and Environment, and Nepal still has. This concern has been tempered by demographic data showing that many countries are moving towards a decline in their population growth rate. There is also some evidence that higher population density can drive technical progress and other improvements (Boserup, 1981). Some have argued that population density can lead to rising land prices and hence increased investments in soil and water conservation (Tiffen, Mortimore and Gichuki, 1994). However, a wider review found that, for population to lead to improved soil and water conservation, market access and high producer prices are required as well as social and economic support to avoid the collapse of social structure (Boyd and Slaymaker, 2000). Looking at the other side of the relationship – i.e. how environmental change affects population growth – some argue that resource decline increases population growth as children are required for labour-intensive water and fuel collection activities, etc.

Key references:

- Boserop (1981) *Population and Technical Change*, University of Chicago Press.
- Boyd, C. and Slaymaker, T. (2000) *Re-examing the "More People, Less Erosion" Hypothesis, Special Case or Wider Trend*, ODI Natural Resources Perspective No 63, Overseas Development Institute, London.
- Tiffen, M., Mortimore, M. and Gichuki, F. (1994) *More People, Less Erosion: Environmental Recovery in Kenya.*

1.5.5 Health, poverty and natural resources: a complex, emerging area

While in certain areas poverty-environment linkages such as indoor air pollution are now better understood, new areas such as emerging zoonotic diseases are only now being addressed. Indoor and outdoor pollution are now fairly well understood as health threats (Bruce et al., 2000). However, the debate on health and natural resources is emerging as an eclectic mix of related themes, including the links with food security, agro-biodiversity, wildlife and medicinal plant trade and the issue of wildlife-linked diseases

such as SARS, foot and mouth, ebola and avian flu (Chivian, 2003). Much research remains to be done in this area.

Key reference: Chivian, E. (2003) "Biodiversity: its importance to human health", Interim Executive summary, project of the Center for Health and the Global Environment, Harvard Medical School.

1.5.6 Vulnerability to disasters, migration and conflict: a key area

One of the reasons that the poor suffer more environmental damage than the non-poor is that they are located in the most marginal, vulnerable areas. In rural areas this means they are located in the steepest, most erosion-prone lands or the driest areas, while in urban areas it means they are often located in areas prone to flooding and landslides.

- Half a billion people in developing countries live in arid regions without access to irrigation, another 400 million are on land with soils unsuitable for agriculture, 200 million are in slope dominated regions and more than 130 million in fragile forest ecosystems (World Bank, 2002a). These areas cover an estimated 73% of the earth's surface.

- The population of urban slums is estimated to be 837 million in 2001, with about half in Asia. It is estimated that about half of Africa's urban residents, one third of Asia's urban population and one quarter of the urban households in Latin America live in slums.

Climate change will compound existing poverty. Its adverse impacts will be most striking in the developing nations because of their high geographical dependence and climate conditions, their high dependence on natural resources, and their limited capacity to adapt to a changing climate. Water scarcity is already a major problem for the world's poor. Independently of climate change, the number impacted by water scarcity is projected to increase from 1.7 billion today to 5 billion by 2025 (AfDB et al., 2003). As well as exacerbating this scarcity, more intensive rainfall events may increase, which will mostly affect low-income countries. Agriculture is vital for food security and exports, but crop yields are expected to decline in most tropical and sub-tropical regions due to changes in rainfall and temperature. There is also some evidence of weather patterns changing the spread of some diseases such as malaria (AfDB et al., 2003).

Within developing countries, the poorest with the least resources and the least capacity to adapt are most vulnerable to climate change. The capacity to cope with climate variability and extreme weather events is highly dependent on the level of economic development. In general, livelihood sources of the poor are usually narrower and more climate sensitive than those of the non-poor.

Key reference: AfDB, ADB, BMZ, DFID, DGIS, OECD, UNDP, UNEP, World Bank (2003) Poverty and climate change – reducing the vulnerability of the poor through climate change.

1.5.7 Poverty, environment and ecosystems: an emerging area

One of the recent developments in the environmental field has been to develop an "ecosystem approach". The Millennium Ecosystem Assessment has recently highlighted this. Both poverty and ecosystems are broad, holistic concepts that present both a challenge and an opportunity. A challenge in terms of the inherent complexity and an opportunity since ecosystems have a less compartmentalised approach than traditional natural resource divisions of forests, water, fisheries etc. In this way the ecosystem approach has more in common with the sustainable livelihoods framework.

Key references:

- WRI (2002a) *World Resource Report, People and Ecosystems – the fraying web of life*, World Resources Institute
- UNEP (2004) *Human Well-being, Poverty, Ecosystem Services, Exploring the Links*.
- Millennium Ecosystem Assessment (2005) Synthesis Report

1.5.8 Importance of politics in understanding links between poverty reduction and natural resources

Many of the factors explaining who the poor are, are social, political and economic processes. While these processes lead to the continuation of poverty, they may also benefit some groups. Where resources are scarce, interest groups in the capital will ensure that they lobby for urban services so rural investments may lose out. Dominant ethnic groups will tend to favour investments from which they benefit. Some men may resist the loss of power that gender equity entails. Wealthy groups may be reluctant to share power and resources (UNDP, 2002a). Powerful leaders in the public and private sphere may seek to advance their own personal and business interests (Kaufmann, 2003). This suggests that reducing poverty will require a change in power relations. As Sen and Dreze (1989) conclude: "The demands of different classes typically do not receive equal treatment because of strong links between economic inequality and the distribution of political power."

Political change in environmental management is key to poverty reduction, just as politics are key to broader poverty reduction. Natural resources are potent political and economic commodities, especially in the poorest countries, so control over the use and benefits of ecosystems is often not in the hands of the poor. Changing this power equation and achieving prudent ecosystem management that benefits the poor requires addressing a complex range of governance issues. These are addressed in the next section.

Key references:

- WRI (2003) *World Resources Report, Decisions for the Earth*, World Resources Institute.
- WWF (2004) *Analysing the Political Economy of Poverty and Ecological Disruption*, WWF Macroeconomics program office, Reed, D.

1.6 Why is the poverty-environment relationship the way it is? Understanding the underlying social, political and economic processes that link poverty and the environment

"It could be argued that the distribution of power and influence within society lies at the heart of most environment and development challenges. Hence new approaches must involve programmes of social development, particularly to improve the position of women in society, to protect vulnerable groups, and to promote local decision-making in development" (World Commission on Environment and Development, 1987).

There has been a long history of political changes that negatively impact on poor people's natural resource based livelihoods. Colonialism often began the process of restricting access to natural resources and redistributing resources to generate profits for the colonial power. There are many examples in Eastern and Southern Africa of white colonial settlers throwing poor people off their land, and in India the British played a key role in creating the irrigation system of Punjab, with dramatic social and environmental impacts. In many colonized countries, land was taken from poor people to grow export crops such as coffee,

tea and rubber. Many of the current patterns of resource access were shaped by the massive impacts of colonialism.

So far we have seen that politics matter to the environment predicament of poor people, but political changes to address these environmental challenges can trigger wider pro-poor governance reforms.

- The environment provides many historical and current examples of a motivation for poor people to organize. Examples include poor fishers, forest dwellers and squatters in urban settlements demanding environmental goods and services as a key step towards wider rights.

- Over the last three decades, environmental civil society has acted as a catalyst for greater democratisation. During the democratisation of Chile and East Asia in the 1980s and parts of Eastern Europe in the 1990s, environmental protests played an important role (McNeill, 2000). Environmental issues had serious impacts, for example in Eastern Europe and parts of East Asia these regimes had typically built pollution intensive heavy industry and major resource extraction with little investment in pollution controls. Environment protests were seen initially as less overtly "political" and hence more tolerated by the authorities. For example in Indonesia, WAHLI, the Indonesian branch of Friends of the Earth was one of the few NGOs tolerated in the 1980s, and the same can, to some extent, be seen in the rise of environmental NGOs in China.

- Environment can be a tangible example of decentralization that impacts on poor people in rural areas. In Latin America for example, many forests have been devolved to municipalities. Bolivia granted municipal governments 25% of forest license fees, while in Guatemala the figure is 50%. In Honduras and Nicaragua municipalities also have greater regulatory powers. While this has allowed poor groups new avenues, local elites can also join in at the municipal level (Ferroukhi, 2003).

- In several countries, the environment has been used as a subject to develop the role of judicial activism. This has been the case particularly in East Africa and South Asia. Environmental issues have also been used to improve poor people's access to legal services.

Key reference: McNeill, J. (2000) *Something New Under the Sun – An Environmental History of the Twentieth Century*, Penguin Books.

1.6.1 Inequitable distribution and insecure access to natural resources, particularly for women

Unequal resource distribution

Some natural resources are so inequitably distributed, e.g. land, that it is a major block on attempts at reducing poverty. This is the case in some countries in Africa, Latin America and Asia (e.g. Pakistan). Even among the poor, some groups lose out more than others from inequitable access to land. This is particularly the case for women and indigenous groups. The counter-factual is also true; agrarian reforms were central to poverty reduction in China, Taiwan, Viet Nam, South Korea and the Indian states of West Bengal and Kerala.

Insecurity of natural resource entitlements of the poor

Land tenure in rural areas has been shown to be an important variable in the decisions of the poor and others to invest in natural resources, in particular to improve land. However, early attempts to impose market orientated land titling have had mixed results. There is growing evidence that in many cases there are customary property systems that can provide cheap, effective and socially accepted remedies. This is borne out by analysis in many places including Niger and Honduras (Jansen and Roquas, 1998). It is clear that rights to a particular piece of land may have multiple claims, by both groups and individuals, including rights

to water, fuel, grazing and cultivation, which may vary by season, species or usage. In this complex situation, it is not clear whose rights will be documented in law when the land title is formalized. In Tanzania, where land titling started in the 1980s, land conflicts are increasing rather than decreasing. Thus it is not clear in the short or even the medium term if land titling alone will improve the position of the poor (Neumann, 1997). In urban areas where tenure rights are more market-based, it is clear that improved land title is vital for poverty reduction in low-income settlements and access to environmental services.

Key references:

- United Nations Development Fund for Women (UNIFEM): www.unifem.undp.org.
- UNDP Gender in Development: www.undp.org/gender.
- Gender at IDS: www.ids.ac.uk/ids/GenderwG/index.html.

1.6.2 Growing inequality in resource access for poor people

Elite seize control of common property resources

Common property resources are essential for the poor, but in many cases access to them is declining. Unwritten traditional rights of the poor to these resources are increasingly being over-ruled by processes that the poor cannot control (Beck and Nesmith, 2001). In western and southern India, privatisation of land has led to a 25-50% reduction in the extent of common property resource lands (Jodha, 1990). There are numerous examples of elite groups taking control of common property resources. This change is made easier as systems of regulation, which controlled common property use in the past, are now breaking down, partly due to population pressure and other factors.

Capture of state owned natural resources by the elite, facilitated by corruption

"The wealthy and powerful outsiders who own the trawlers and tuna nets are friends with local authorities and give them generous donations for public functions such as Independence Day celebration" (Indonesian villager, quoted in Mukherjee, 1999).

In many cases, government formally controls natural resources. When these resources are leased out, the wealthy are more likely to benefit from their use. This is especially true of forests and fisheries.

This problem is worsened by corruption. Political patronage and sweetheart deals are more prevalent in remote areas far from official concern and public scrutiny, precisely those areas inhabited by the poor. Natural resource wealth for political patronage includes forests in Indonesia, Cambodia and Kenya, and minerals in Central Asia.

Sometimes a critical mass of committed staff in a government agency, often supported by strong leadership, can promote NRM changes that benefit poor people. This happened in the case of the Sri Lanka Forestry Department, with some support from external donors. In many countries, timber felling and transport is banned or heavily regulated, even from private lands. This has debatable impacts on deforestation in the long run as it tends to lower incentives to plant trees, reduces the price received by small-holders and can lead to corruption in the granting of felling permits (Gunatilake and Gunaratne, 2002). Progressive members of the Forest Department in Sri Lanka, under strong pressure from international donors, were able to liberalise the permit system to try to reduce corruption.

Key references:

- Beck, T. and Nesmith, C. (2001) "Building on poor people's capacities: the case of common property resources in India and West Africa" in *World Development*, Vol. 29, No 1, pp 119-113.
- Global witness (2004) www.globalwitness.org.

1.6.3 Wealthier groups constrain poor people from benefiting from natural resources

Control by the wealthy of inputs needed to gain from the natural resource base, such as credit and water for irrigation

To generate wealth from land many inputs are required, including labour, seeds, fertilizers, pesticides, tractors and threshers and, in many arid areas, water for irrigation. To finance fertilizer and other inputs, credit is key. However, rural areas, with their dense inter-linked social network, often provide the dominant wealthier landowners and traders with a monopoly position and virtually all-or-nothing choices for the weaker parties.

Access to irrigation water, like land, is heavily biased in favour of the wealthy farmers. Water from surface irrigation passes along channels from the head-enders, whose supply is more assured, to the tail-enders, whose supply is less reliable. Groundwater irrigation is also more likely to be affordable for wealthier farmers, although poor farmers tend to find groundwater easier to access than large surface water schemes (Roy and Shah, 2002).

Production chain in natural resources biased against the poor

Natural resource based production, like many aspects of the rural economy, is often linked through a very inequitable commodity chain with little of the value of the resource going to the poor. This can be seen in the rubber tappers of Latin America or the charcoal producers of Africa. Of the charcoal produced in Senegal, 90% is sold in the capital Dakar. The cutting takes place by about 11,000 migrant woodcutters who are hired by largely urban-based merchants who advance funds to the woodcutters and arrange the permits required and then purchase the charcoal three months later, transporting it to the city in hired trucks. In the city the charcoal is sold to about 300 urban wholesalers who then distribute it to 2,000 urban vendors. The charcoal market generated US$ 6.6 million in 1987, but this is very unevenly distributed. The groups that make the biggest profits are the urban wholesalers, merchants and outlet owners. Vendors and woodcutters make little above subsistence level. The wealth is even more concentrated with the market dominated by about 20 merchants who made about US$ 300,000 per year (in 1994 prices) and 20 or so wholesalers who made about US$ 33,000 (at 1994 prices). The chiefs of villages where cutting takes place also benefit, receiving US$ 600-1,700 per year (Ribot, 1998).

1.6.4 State policies penalising resource use by the poor

Problem of market access and regional marginalization

"If we get the road, we would get everything else, community centre, employment, post office, water, telephone" (A young woman, Little Bay, Jamaica, quoted in World Bank, 2002a).

Poor people are predominantly located in certain regions far from a major city without access to infrastructure and often dependent on marginal agriculture. In almost all countries rural poverty is more severe than urban poverty. Despite considerable reductions in poverty in Ghana's capital, Accra, between 1992 and 1998 poverty increased in the remote northern Savannah zone. Similarly in Mexico between 1990 and 1994, urban poverty fell in Mexico City but increased in the remote Chiapas region, contributing to the social conflict in that region. However, despite this, many countries systematically discriminate against rural areas in favour of urban areas (Lipton, 1977).

Use of natural resources by the poor is highly taxed

In many countries, subsistence natural resource activities (e.g. timber extraction, fishing and marketing, grazing, agriculture, water use) are subject to controls and taxes that are regressive on the poor people involved in these activities. This can discourage engagement in market transactions that would help

the poor generate returns from their access to natural resources. Households in Uganda face a confusing array of resource-related taxes that seem to be largely arbitrary. Taxes on subsistence fish extraction, production and distribution are levied in many countries. Around lake Chad in Central Africa, fishery fees are levied by traditional authorities, central government and by soldiers (Bene, 2003).

Governments often blame the poor for natural resource degradation: anti-poor natural resource regulations and enforcement

There are many examples of the poor being blamed for environmental degradation. The poor are often blamed for deforestation. In many cases the poor are blamed for over-grazing or hunting, and when protected areas are created the poor suffer most. This has been well documented among the Maasai in Kenya and Tanzania, and in protected areas in Thailand, Nepal, India and Sri Lanka. Sometimes environmental regulations are introduced in a draconian way that negatively impacts the poor. In Mali, the 1986 Forest Law banned bush fires, made felling of certain species illegal without Forest Department permission, and made wood-saving stoves compulsory. Wood trade was forced underground and poor people were unable to pay the fines so their livestock was confiscated (Benjaminsen, 2000).

1.7 How can pro-poor natural resource outcomes be achieved? Identifying the drivers of change

Depending on the country-specific political structures, pro-poor environmental decisions can be pursued. This chapter identifies four main avenues:

- pressure from below, in particular from poor people in innovative alliances often supported by civil society, and in some cases benefiting from decentralisation and collective management
- political institutions as engines of progressive change, including the executive, political parties, parliament, civil service and judiciary
- taking advantage of wider political change
- responding to external pressures – the role of donors in supporting an enabling framework for pro-poor change.

1.7.1 Pressure from below: poor people in innovative alliances

The poor are not passive in the face of political pressure, although they often face major hurdles and opposition. Much can be learned from processes where the poor themselves have initiated political change. Due to the dependence of some poor households on natural resources, they face strong incentives to struggle to protect their access rights.

There are some striking examples of poor groups, often with support from others, organizing to demand access to natural resources, especially land. This is widespread in Latin America, illustrated by the rise of extraction reserves for rubber tappers in Brazil, although there is still controversy as to how much this has benefited the rubber tappers. Another example from the region is the Chiquitanos Indians of Bolivia who in 1992 formed an organization to protect their land from timber companies (McDaniel, 2003). In urban areas, many slum settlements in Latin America have organized themselves to demand tenure and services.

Civil society

The example from Brazil's forests illustrates that, for this kind of political change to succeed, poor people need to make innovative alliances with both national and international civil society organizations. International organizations, by bringing pressure to bear on resistant governments, can also help legitimise the struggle of poor people. The example of Brazil also illustrates the importance of changing perceptions through strong leadership and canny use of the media. One of the challenges of these pro-poor movements is to up-scale so that they move from the local to the national, leading to broader changes in policy. One successful example of this is the rise of poor fishing groups in Kerala and their battle with trawlers to control resource access (Kurien, 1992).

Decentralisation and so-called "community management"

There has now been over 20 years of experience with political change through devolving NRM. This takes many forms including control by district organizations (e.g. panchayats in India), village committees (e.g. Malawi), legal organizations (e.g. conservancies in Namibia) and self-initiated organizations (e.g. Orissa). A review of schemes in Africa and South Asia found that the poor's perceptions of benefits depended on the degree of access they had prior to devolution and the length of time with devolution. In some countries, such as parts of China, the Philippines and Southern Africa, households responded with enthusiasm since decentralised NRM was a considerable improvement compared to earlier restrictive regimes. However, disillusionment sometimes set in as bureaucracies failed to meet expectations raised by the new policies. The pro-poor changes inherent in these schemes were driven (or obstructed) by the key actors, including power relations within the beneficiaries, traditional leaders, local government, NGOs and donors.

1.7.2 Political institutions driving change

Executive

As the key political body in any country, the President, Prime Minister or their Cabinet colleagues can play a vital role in driving pro-poor environmental change. At the sub-national level, an active Mayor can fulfil similar functions. Examples include the appointment of Lula as Environment Minister in Brazil by the Brazilian President, Lula (no relation). In Indonesia, the committed Minister for Forests has sought to take on many of the vested interests in the forest sector. South Africa's Minister for Water and Forestry, Kader Asmal, was credited with helping push many of the achievements in the water sector.

Political parties and parliament

As parties shape public policy in many countries, gaining the support of the political party in power can be key to effective change. This is illustrated by the complex struggle of artisanal fishers in Kerala to gain their rights, which eventually forced the political parties to take notice and respond.

Parliament can be a key forum for political change. There are many cases of key pro-poor laws being passed by parliament. In Brazil, a key step in improving the lives of urban slum dwellers has been the 1988 constitution that encouraged municipal policies to improve tenure for informal settlements (or *favelas*). In July 2001 a key law was passed at the federal level to provide the legal underpinning for municipalities to legalize *favelas* (World Bank, 2002a).

In addition to passing legislation, individual Members of Parliament can be vehicles to provide improved environmental conditions, for example in Uganda. However, in many countries politicians have patron-client relationships with slum populations and they may resist approaches where poor people are given greater control, for example in developing environmental infrastructures themselves. This was a challenge for a NGO and community process to improve sanitation in Indian cities. These effective grassroots organizations threatened the local politicians, who may have alliances with existing contractors or are no longer able to get a "cut" of the work. However, there were also politicians facing election who realized the benefits of being associated with a successful local initiative (Burra et al., 2004).

Government agencies

Where the government agencies are progressive they have a key role to play in creating an enabling framework for poor people's participation. This can arise through a progressive agency introducing or implementing pro-poor reforms. An example of this is South Africa's Department of Water and Forestry Affairs, which has been extremely successful in introducing water supply and sanitation to poor households.

A key change that governments can introduce is to allow poor groups to bid for government contracts. This can reduce corruption, allow the poor to earn income and ensure that infrastructure is designed in ways most appropriate for the poor. In some areas, this has played a major role in making environmental infrastructures such as water supply and sanitation more pro-poor.

Legal activism for environmental rights

In several countries, judicial activism has been a driving force in pro-poor environmental outcomes. This arises in countries such as South Asia and East Africa where the judiciary have traditionally played a strong role in public policy. In Tanzania, the constitutional right to life has been interpreted to include the right to an environment free from pollution. In October 2001 the then President Moi of Kenya tried to remove from protection up to 167,000 acres of forest, or about one third of the total forest estate. A number of public interest organizations raised objections seeing it as politically motivated to buy votes by handing out forests. The court initially delayed it, but before the formal hearings could begin the Moi government was defeated in the 2003 general election (Ireland and Tumusahabe, 2004). In Bangladesh the Coordinating Council for Human Rights (CCHR) coordinates a growing network of human rights and environmental groups totalling more than 120. While this approach works in a crisis, it has its weaknesses in that courts could play a role that they are all ill equipped to handle. As the former Chief of Justice of India notes: "I entirely blame the government for the Supreme Court becoming the first resort, instead of being the last one." (Chief of Justice Bhagwati, quoted in DTE, 1997).

1.7.3 Taking advantage of wider political change

Pro-poor environmental improvements are inevitably bound up with more general pro-poor political change. This suggests that it is often only in the context of these wider changes, or by taking advantage of these wider changes, that major progress can be made. Many of the examples already quoted have arisen after a regime change, such as the election of the African National Congress in South Africa (ANC) leading to a massive expansion in access to water and sanitation, and the fall of the Suharto regime leading to the demise of Bob Hasan and other politically connected timber tycoons in Indonesia. It was the general return to democracy in Latin America that helped facilitate the rise of indigenous groups in forested areas and a more facilitative framework for regularizing urban slum dwellers.

1.7.4 Responding to external pressure – the role of donors

Donors have a key role to play in facilitating many of the above changes and there is widespread evidence of the positive catalytic role played by external interventions. However, it is important that donors ensure that the value systems and views of low-income households shape environment and development policy. There is considerable evidence that many of the assumptions of environmental policy in developing countries are based on western approaches and values that may be alien to the resource users. For example, professional foresters and ecologists in Africa have valued closed canopy forests, almost defining forests in those terms, so that conversion of this is seen as "degradation". Yet those who live there may consider such conversion to be beneficial since the bush fallow vegetation provides a wider range of plant products and more productive land (Leach and Mearns, 1996). A democratisation of expertise is needed with much more analysis based on poor people's own perceptions of their local environment to challenge and validate existing dominant views about poverty, environment and governance. This is not to reduce the value of conventional science, but merely to ensure it is rooted in local realities with as much historical data as can be inferred.

Donors also need to encourage the international community to place a greater focus on environment-governance issues. Greater emphasis on changing dysfunctional governance patterns that keep the poor from deploying their natural endowments wisely will aid in meeting all the MDGs. These issues can also be given greater attention in PRSPs. These will only lead to lasting outcomes if they move from addressing the symptoms of poverty to addressing root causes such as exploitation patterns specific to regions and their natural resource bases (Mukherjee et al., 2002).

Finally, donors have a role to play in ensuring that industrialized countries address the trade-offs between the poverty reduction needed in developing countries and global (and at this time largely rich country) concerns with maintaining the planet's environmental stability. In other words, if we want low-income countries to protect biodiversity and reduce greenhouse gas emissions, then the rich countries have to pay for it. This is the logic behind the Global Environment Facility (GEF), but so far the resources are minimal compared to the task at hand, and the poor often continue to suffer the opportunity costs of biodiversity protection in protected areas.

Part 2: IUCN's work - improving the effectiveness of poverty-environment links & its policy implications[2]

By Naresh C. Saxena

2.1 Summary

This paper proposes to identify work being carried out in the Commissions and Secretariat that is of critical importance to IUCN on the poverty-environment links, and that has the potential of offering lessons and tools for improved delivery in this field. It suggests ways in which IUCN can improve the impact and influence of its work on the poverty-environment links, including considerations of gender equity. It also identifies new areas for programme delivery, specific needs for knowledge management, and tools for policy advocacy to improve delivery on the poverty-conservation links in the context of implementing the IUCN Intersessional Programme 2005-2008.

IUCN has always prided itself on the fact that its brand of conservation is people centred and that it balances ecological sustainability with social equity. IUCN is exploring several strategies of linking livelihoods with biodiversity conservation, for example through investing in the sustainable use of natural resources such as the harvesting of NTFPs, or by supporting community enterprises in the vicinity of protected areas, such as ecotourism. IUCN supports community-based natural resource projects aimed at improving livelihoods in and around protected areas throughout the regions. Many such projects work with marginalized groups, for example: enhancing women's participation in the Siwaliks Hills Process in Nepal; working with mountain communities in the North West Frontier Province and Northern Areas of Pakistan; promoting activities to improve the living conditions of indigenous communities in the Laguna Lachua area of Guatemala; and creating village funds in Djoudj National Park in Senegal.

The IUCN Commission on Environmental, Economic and Social Policy (CEESP) supports a substantial programme on sustainable livelihoods and collaborative management of wild resources, addressing poverty and sustainable livelihood issues at the local level. The Biodiversity Policy Coordination Division (BPCD) produced a discussion paper that reviewed linkages between ecosystems and livelihoods, as well as the role of risk management.

IUCN has recently embarked on a project supported by an internal 3I-C Fund (i.e. innovation, integration, information and communication) to explore and better understand the links between poverty reduction, sustainable livelihoods and ecosystem management. IUCN supported a project in several countries, such as Uganda and Tanzania in Africa, and Lao PDR and Viet Nam in Asia to get an insight on how the mainstreaming of environment in conservation and poverty reduction policies is being done, and whether it has succeeded in securing sustainable livelihoods.

2.1.1 New challenges

IUCN also acknowledges that improved livelihoods and enhanced conservation are not necessarily coincidental. Opportunities for win-win solutions can be limited, and in many cases there are trade-offs between different activities based on different biodiversity and poverty criteria. Biological diversity also involves equity issues as it is rarely assigned the same value by all stakeholders, and the livelihood needs of the poor are frequently subordinated to the interests of more powerful groups. One of the main challenges for IUCN is to find means to ensure the equitable sharing of costs and benefits arising from the conservation of species and ecosystems from local to global levels.

[2] *The author is grateful to a large number of IUCN professionals, both at Gland and the field offices, who have helped in completing this paper, and whose ideas have been freely borrowed without proper acknowledgement.*

Most of the world's forests are outside protected areas, so IUCN has decided to pay more attention to the conservation of biodiversity that is outside the protected areas by promoting the concept of forest landscape restoration (FLR) which aims to regain ecological integrity and enhance human well-being in degraded or deforested forest landscapes.

2.1.2 Greater efforts needed

On the negative side, it must be admitted that there has been no scaling up of micro-level successes, and lessons learnt on policy constraints have had little impact on government policies. Despite numerous micro win-win projects, the national indicators for ecosystem management in many developing countries where IUCN is active have not yet shown a drastic improvement. One problem is that the concept of mainstreaming environment is not yet well understood and practiced by the national governments. To some, it is an add-on responsibility, often without budget support. The second problem is funding. The third problem is that enabling a policy and legal environment is but one of the necessary ingredients needed to transform our natural capital into wealth creation, poverty reduction and enhanced values of natural resources.

While many recent projects launched by the IUCN and supported by the 3I-C Fund have done well in exploring and understanding the links between poverty alleviation, sustainable livelihoods and ecosystem management, the concept has still not been translated into reality in all the activities (especially older ones) of the IUCN, where concern for the poor may still operate more or less at the rhetoric level.

2.1.3 Extension of projects beyond parks and wetlands

IUCN may consider having a clearer and stronger strategy to increase wood production on farmlands. However, for the farm sector to contribute to meeting market demands will require new laws, secure tenurial arrangements, credit, and transparent, predictable pricing and marketing policies as incentives. Often forest bureaucracies impose restrictions on harvesting and transport of wood, even when it emanates from private lands, with a view to preventing theft from forest lands.

Therefore IUCN may wish to include farm forestry, especially complementary agroforestry, in their field projects, both for execution and policy advocacy. The complementarities between agriculture and forestry through a watershed approach should be given greater importance in the IUCN projects. The poor would be quite willing to protect forests if it helps in improving the moisture regime for their crops, or improves their incomes through wasteland regeneration.

IUCN may consider increasing its presence as regards intervention in groundwater management and sanitation in its project portfolio, as it affects the poor in more ways than one.

2.1.4 Policy advocacy

One of the reasons for limited success on the poverty front is the hard reality that both poverty and environmental degradation are caused by macro-policies and issues of political economy on which IUCN has little control and which cannot be easily changed through delivery at the field level. IUCN should therefore consider evolving interventions aimed at creating an enabling environment and facilitating changes in the larger policy and institutional frameworks within which direct interventions and empowerment processes would then operate. These would include, for instance, opinion building and perspective building at multiple levels, research studies, platforms for collective analysis of the implications of research findings and initiatives to disseminate lessons learned from programme implementation. Therefore IUCN's strategy should strike a happy balance between project delivery and policy advocacy combined with the dissemination of knowledge. This, however, is not to deny the role IUCN is already playing in policy advocacy.

2.1.5 Governance

Good governance is central to issues of poverty reduction as well as improvement in environmental quality. Good governance requires three basic conditions: decentralization (the authority structures must be decentralized and devolved); inclusiveness (decision-making processes must be participatory and all-inclusive); and accountability (government strategies and activities must be transparent and accountable to the populace).

One of the most important roles that IUCN can play in global environmental governance is to provide up-to-date information on critical issues. Governments often turn to IUCN to research gaps that stand in the way of effective decision-making. Thus IUCN should be dedicated to the production of accurate, up-to-date research and data on the most pressing environmental issues.

2.1.6 Tenurial security

Initial findings from IUCN's field work indicate that it is not resource scarcity *per se* that leads to livelihood insecurity, but rather insecure rights to resources, whether scarce or abundant, for resource-dependent people and communities.

Tenurial insecurity may exist in a variety of situations of which three are fairly widespread in developing countries: (1) when government is not able to enforce property rights and free access, even though it may be against government regulations (quite common); (2) when there are no property rights and the resources are openly accessible; and (3) when there is conflict between law and policy, or between customary practice and formal law. From the examples discussed in this review it follows that open access is as iniquitous (and injurious to the environment) as government or private monopoly. Second, effective management by local people cannot be taken as an automatic outcome of the transfer of resources to them; it is a process that needs support from donors and civil society, at least in the initial stages. Its effectiveness will also depend on the nature of the resource.

While promoting local and customary practices to manage the communal resources, some forms of workable law enforcement systems should be in place to secure local / community control over resources and prevent free-riding. More secure community ownership will motivate people to manage resources productively. In addition, it is important that people do not receive conflicting signals about their rights from different government departments.

2.1.7 Gender

IUCN should develop short as well as long term goals of supporting women's participation in NRM. The short-term goal should be to integrate women in on-going or new programmes because traditional gender roles assign subsistence tasks of biomass gathering to women. The long-term goal should be to empower women to gain greater control over their labour, knowledge and local natural resources, which may eventually lead to changing gender relations resulting in greater gender equity.

2.1.8 Technology

As already observed, IUCN is shifting its priority to forests outside parks. These constitute the bulk of forests in the developing world and should include both village forests and government forests. Here, in addition to promoting community management IUCN should also consider how to change silvicultural practices that will promote people's livelihoods. There seems to be inadequate understanding of the social implication of technology; projects should consider changing forest technology by shifting attention from timber to floor management and production of more gatherable biomass. What is essential is to develop mixed forests in place of industrial plantations on forestlands to meet the livelihood needs of the poor.

2.1.9 NTFPs

Issues relating to productivity, access and marketing of NTFPs are already quite important in IUCN projects. Much of the profits in the trade of NTFPs will go to those who value addition through processing, storage, transport, etc. and primary gatherers will have to assume these functions if they wish to obtain a higher share of the profits. IUCN may consider weaving this aspect into its projects.

2.1.10 Measurement

IUCN projects are strong on community mobilisation, but still weak in measuring it. It is particularly important that IUCN continually assesses the impacts of actions against expressed goals. The three outcomes of participation – learning, empowerment, and a vibrant organization – need to be measured in IUCN projects through observable indicators, which will vary from project to project. Each project must develop clearly observable indicators on people's participation, so as to judge whether they are on track or not. Such indicators should also be used by monitors and evaluators, who have to do mid-course evaluation and impact assessment.

Moreover, who better to tell us what has happened to the rural poor than the people themselves? All this suggests that participatory assessment and participatory evaluation are important components of pro-poor environmental management.

2.1.11 Transaction costs for different resources

As IUCN works on a variety of natural resources, from forests to wetlands to protected areas, it may be useful to build hypothesis as to which type of resources are more easily amenable to community management, and what costs are involved in sustaining such management. Establishing early success is vital for attracting large-scale funding.

2.1.12 Promotion versus consolidation

Due to IUCN's efforts, exciting beginnings have been made in a number of countries linking environment regeneration to poverty reduction. The potential returns from such efforts are immense because natural regeneration is a low cost option when compared with that of longer gestation plantations. Collecting NTFPs generates a lot of self-employment and potentially reduces conflicts between forestry departments and rural communities. However, much is still to be learned before it is known that the emerging patterns are more generally applicable.

Much of the effort of the IUCN staff to date has concentrated on proving to the governments and donors that conserving the environment is necessary for poverty reduction. Such promotion may be valuable in the early phases of a programme, but there are potential problems in repeatedly making the same argument without sustaining it with large-scale successes. Though it is important to be able to persuade key actors of the merits of jointly addressing environment and poverty issues, it eventually becomes crucial to temper this with critical appraisal, limitations, long-term strategies and capacity building to implement such policies.

It is also good to remember that the success of peoples' participation in one area is no guarantee for its replication elsewhere. Even within a country, community endeavours may be a great success in one part of the country but not do well elsewhere.

One problem with over-promotion of participatory management is that it can lead to massive donor interest and funding support, which may exceed the capacity of the IUCN and civil society to absorb. Apart from the lack of institutional capacity, the technical skills to suit different kinds of resources are also insufficient.

Participatory management is process oriented and does not lend itself to becoming a target and product oriented programme. Along with rapid acceptance of the idea of the environment-poverty bind, the capacity of institutions to support it, as well as technologies, should also be critically evaluated and

improved. As argued above, different resources have different requirements, and all are not easily amenable to community management. In the years to come, this aspect of differentiating one resource from another may be a critical variable for IUCN to decide its operational strategy.

2.2 Objectives

This chapter will, inter alia, address the following issues:

1. What are the situations when environmental improvement directly leads to poverty alleviation? Is IUCN developing pilot projects to establish the need for up-scaling such projects?
2. Some examples of successful intervention from the field.
3. Are appropriate policy lessons being drawn from these pilots, such as
   - improving the asset base and access of the poor to natural resources
   - promotion of NTFP based natural forests by adopting silvicultural practices that help increase gatherable biomass
   - developing markets that work for the poor
   - promoting social capital among the poor through sustained multi-sectoral work amongst them
   - developing appropriate monitoring indicators to measure the progress on the new objectives?
4. What are the factors outside the control of the poor that leads to environmental degradation – subsidies, lack of tenurial clarity, bad governance, market distortions, elite capture, insufficient attention, weak enforcement, etc? Is IUCN doing enough to generate knowledge on these issues and then do policy advocacy through dissemination and networking? Examples from countries.
5. Are there new areas that have so far remained unexplored by IUCN, but have great potential to improve both the environment and livelihoods, such as micro-watershed management and recharge of groundwater in the semi-arid tropics, agroforestry, afforestation of common lands, etc.?

2.3 General issues on poverty-environment links

The relationship between poverty, environment and development is quite complex and not amenable to easy generalisation. To capture this diversity in terms of a single perception of 'vicious circle' (poverty – environmental degradation – more poverty) would be naïve. It would be equally naïve to rule the perception out altogether. It is a fact that many poor have few options for generating income outside natural resources such as land and water, and therefore they use common resources such as non-private land, tanks, ponds and rivers more intensively than the non-poor. Because of their poverty they cannot afford cleaner fuels, so they burn bio-fuels to cook their food. This not only degrades the environment it also leads to deterioration in their health, especially women, children and older people who suffer because of indoor pollution. This, in turn, reduces the number of working days available to the poor for earning their livelihoods, and thus a vicious circle is established.

However, it would be simplistic to come to the conclusion that poverty alone leads to resource degradation. If one looks at the totality of natural resources, poor people do not cause all that much of the environmental degradation, especially that relating to air and water, since their levels of consumption and production are considerably lower than those of the rich. Elite social groups with more resource-intensive lifestyles escape censure, but the poor get blamed for eking a fragile subsistence. Much of the deforestation in Brazil is due to cattle ranching. It has been observed that if North America and Europe were to cut beef consumption by half, deforestation in Brazil could be checked without delay.

By 2050, the world's population could grow to about 10 billion people. The atmosphere can absorb about 10 billion tons of carbon dioxide a year before environmental damage sets in. If distributed equally

this would mean that each person on the planet could sustainably generate a ton of carbon dioxide each year. But per capita emissions of carbon dioxide currently stand at almost 20 tons a year in the USA, 10 tons in Britain and four-fifths of a ton in India. Thus the richer countries need to reduce their carbon emissions to prevent further global warming.

Degradation is often due to excess consumption, and therefore the rich and their life-styles cannot be absolved from the responsibility of creating demand for goods being produced using natural resources, be it timber, water for irrigation, or animal skins. After all, urban pollution is a result of too many vehicles and too much industry owned by the rich or catering to their demands. Similarly, water pollution is mostly due to industrial activity or over-exploitation of groundwater by rich farmers. Thus, not all the environmental degradation is due to pressure from the poor, although their poverty does lead to land degradation especially that of forests and common lands, and hence in return intensifies their own poverty.

In many developing countries, such as Bangladesh and Viet Nam, land concentration and landlessness is increasing due to distress sales and indebtedness of the poor, thus intensifying economic stratification, which is leading to growing reliance on common property resources. This group of very poor landless people have little or no option but to rely on common resources for their livelihoods.

Environmental degradation puts tremendous pressure on poor rural households. For instance, soil erosion leads to falling yields and hence falling incomes among poor farmers. Depletion of local commons such as pastures and streams means that poor families (and especially women) have to invest much more time and effort in fetching water, fuel wood, fodder and other essential activities. As natural areas are transformed into agricultural land, the growing scarcity of indigenous plants and animals can mean a loss of natural safety nets in times of stress, and thus increased vulnerability to price shocks, cyclical food shortages and natural catastrophes (IUCN, 2004b).

Even when the poor over-exploit common lands it is often due to the 'tragedy of the commons', i.e. the lack of clear tenurial rights. Forests and grazing lands become open access properties and the lack of clear property rights leads to their overuse. Even poor farmers maintain their private lands, but where property rights are not clear such as on encroached or common lands, degradation is common.

Thus the problems associated with the degradation of common grazing lands and forests are more due to the absence of clearly and equitably defined common property rights and weak institutions, rather than low discount rates for the future in the case of the poor. Moreover, the poor participate in such degradation because of their lack of other livelihood options. Sometimes poverty can force people to exploit natural resources unsustainably, for example by forcing them to cultivate on steep slopes, which often leads to erosion and declining yields over time.

The important point here is that, as the poor are dependent on nature for their livelihoods, they are very vulnerable to natural calamities, environmental degradation and ecological disasters. Where the poor appear to degrade the environment, it is basically because of lack of incentives and appropriate institutions, including lack of clarity on property rights.

In addition, the fact that environmental goods and services are not priced correctly also leads to their abuse. Good examples of market failure include (1) industries receiving subsidies on forest products, (2) farmers obtaining cheap power, water and fertilisers, leading to excessive consumption and waterlogging or shortage for others, and (3) polluting industries not paying for causing air and water pollution since these costs have not been internalised.

The rich are able to take advantage of government subsidies that harm the environment in many ways. Over-subsidising irrigation leads to careless use of water, resulting in long-term damage to soil fertility. Excessive and inappropriate subsidisation of different types of fertilisers leads to disproportionate use of one kind of fertiliser vis-à-vis others, leading to long-term damage of soil quality. Subsidy-promoted resource exploitation has often degenerated into over-logging of forests, overgrazing of grasslands, depletion of watersheds, the decline of biodiversity, and air and water pollution, sometimes with toxic wastes. Yet many of the original subsidies promoting overexploitation are not discontinued, even though they may now be harmful to both the environment and the economy at large. Perverse subsidies inflict grand scale injuries on the environment but are often continued because the lobby in favour of environmental protection, where

benefits would go to millions of faceless people, is weak whereas the polluters are better organized and able to bend the state in their favour.

Market failures and policy distortions often bias exploitation decisions against the consideration of environmental values. Poorly defined or enforced property rights create an incentive for quick exploitation and disregard for external impacts. Subsidisation of natural resource extraction encourages their use beyond what their full costs to society would warrant. When local users do not manage local resources, the full benefits of sustainable management do not accrue to them. These are only some of the reasons why we cannot expect the 'environment to take care of itself' as an automatic result of economic development.

To sum up, in addition to demands from the local dependent people the following factors have greater adverse environmental impacts:

- resource-intensive lifestyles of the rich
- lack of clear tenurial rights
- weak regulatory institutions
- incorrect pricing and market failure
- corruption and state capture by the elite.

IUCN may like to pick up these issues for policy advocacy, as discussed later in this paper.

2.3.1 Towards a 'virtuous circle'

In the last 30 years there has been enough empirical evidence to establish that environmental improvement must go hand in hand with economic development because any economic development that destroys the environment will create more poverty, unemployment and diseases and thus cannot even be called economic development. It may just be the transfer of resources from the poor to the rich. Therefore, environmental concerns in the developing world must go 'beyond pretty trees and tigers' and must be linked to peoples' lives and well-being. In the ultimate analysis, environmental management and economic development are mutually supportive aspects of the same agenda. A poor environment undermines development, while inadequate development results in a lack of resources for environmental protection.

Some of the strongest environmental movements have emerged in the poorest countries. But their impetus and vision differ fundamentally from Northern movements. Environmentalism as it has been manifested in the global North:

- relates to post-industrial values against a background of mass consumerism providing ever-greater opportunities for leisure and access to nature for all
- uses 'social movement organization', formal leadership, lobbying and court work, activities exemplified by the work of Friends of the Earth
- has a single-issue ideology; lobbies such as the wilderness movement required changed attitudes rather than new distributive systems.

In the global South (particularly in India) environmentalism arose early on in the industrialization process from conflict with iniquitous and destructive development processes. Moreover it:

- uses direct action due to the immediacy of resource shortage and ecology
- was often based on traditional means of protest and existing social networks
- has a complex ideology of the poor originating from conflict over productive resources
- responds to class conflict over ecological, human rights, ethnicity and justice issues.

If institutional mechanisms were so developed as to permit sustainable use or even betterment of the environment we would have good possibilities of a 'virtuous circle' operating instead of a vicious one. An improvement in the natural resource environment improves the resource base of the poor and can alleviate poverty, which in turn can strengthen the capability of the poor to enrich their environment. A vicious circle, to the extent that it operates, can be turned into a virtuous circle, with the poor becoming the protectors of the environment.

2.4 The role of IUCN

IUCN's Mission is to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. The fulfilment of IUCN's mission requires the Union to address and effectively integrate key social issues in its conservation programmes.

IUCN links its Mission to the paramount goals of the international community on environment and sustainable development, in particular Agenda 21 and the MDGs. Consequently, IUCN is committed to making its programmes and activities fully responsive to such agreements, and to actively contribute to their fulfilment, particularly in relation to the objectives of achieving sustainable human development, alleviating poverty, and ensuring environmental sustainability.

IUCN emphasises the fact that sustainable development cannot come about unless all three elements (social, economic and environmental) are appropriately addressed. Given the preoccupation of governments with short-term social and economic problems, IUCN's role would be to emphasise in particular the environmental foundation of long-term sustainable development. This does not mean attacking the poverty agenda. Indeed the essential point is (as the Brundtland Commission recognised) that, unless environmental capacity is conserved and enhanced, poverty will not be relieved in the long term.

IUCN's poverty and conservation work builds upon the World Bank's 2000-2001 conceptualisation of poverty. The three causes of poverty described by the World Development Report 2000/2001 are lack of income and assets, voicelessness and powerlessness, and vulnerability to adverse shocks. The framework for action to reduce poverty includes:

- opportunity (access to markets, resources and income-generating opportunities leading to wealth creation)
- empowerment (influence on state institutions and participation in political processes and local decision-making)
- security (reducing vulnerability to risks such as ill health, economic shocks, natural disasters, and seasonal or annual variations in resource availability).

More recent work at the World Bank includes the dimension of capability or human capital, which addresses the ability of the poor to utilize economic opportunities, including their education, skill and health levels. IUCN recognises significant inter-linkages between these dimensions.

2.4.1 IUCN's commitment to the poor

A sizeable portion of IUCN's membership and donors has placed poverty reduction high on its list of priorities. IUCN has always prided itself on the fact that its brand of conservation is people centred and that it balances ecological sustainability with social equity. IUCN believes that a 50% reduction in the number of people living in absolute poverty by 2015 is one of the most urgent milestones in achieving sustainable development and that conservation has to be enlisted in the fight against poverty.

IUCN is exploring several strategies of linking livelihoods with biodiversity conservation, for example through investing in the sustainable use of natural resources such as the harvesting of NTFPs, or by supporting community enterprises in the vicinity of protected areas, such as ecotourism. IUCN supports

community-based natural resource projects aimed at improving livelihoods in and around protected areas throughout the regions. Many such projects work with marginalized groups, for example enhancing women's participation in the Siwaliks Hills Process in Nepal; working with mountain communities in the North West Frontier Province and Northern Areas of Pakistan; promoting activities to improve the living conditions of indigenous communities in the Laguna Lachua area of Guatemala; and creating village funds in Djoudj National Park in Senegal.

CEESP supported a substantial programme on sustainable livelihoods and collaborative management of wild resources, addressing poverty and sustainable livelihood issues at the local level. The BPCD produced a discussion paper that reviewed linkages between ecosystems and livelihoods, as well as the role of risk management.

The members of CEESP from five continents have produced an impressive array of documents that indeed improve our understanding of the current NRM situation, limitations and unique opportunities. These papers demonstrate how sustainable livelihoods are intimately related to the sustainable use of natural resources and the conservation of species, habitats and the services provided by healthy environments. They are intimately related to equity. This work has been published in an issue of *Policy Matters* that includes in-depth case analyses, arguing for the full appreciation of traditional knowledge. Section two of this issue of *Policy Matters* is imbued with hope. Seven articles span cases from India to Congo Brazzaville, from Ecuador to Mongolia to South Africa, each one telling how local communities organized to manage their local environments. Alone or in partnership with the government and other actors, motivated by a natural disaster or by an externally-supported project, evolved into a co-management institution or empowered as local management bodies, these communities truly lead the way and show how local values and identities can thrive in governing natural resources in a sound manner.

There are failure studies too. Ethiopia and the Senegal River Basin are cases in point of how a history of disempowering local communities and impeding indigenous NRM systems has sown the seeds of 'unsustainable livelihoods' and undermined conservation.

IUCN also acknowledges that improved livelihoods and enhanced conservation are not necessarily coincidental. Opportunities for win-win solutions can be limited, and in many cases there are trade-offs between different activities based on different biodiversity and poverty criteria. Biological diversity also involves equity issues as it is rarely assigned the same value by all stakeholders, and the livelihood needs of the poor are frequently subordinated to the interests of more powerful groups. One of the main challenges for IUCN is to find the means to ensure the equitable sharing of costs and benefits arising from the conservation of species and ecosystems from local to global levels.

Most of the world's forests are outside protected areas, so IUCN has decided to pay more attention to conservation of biodiversity outside the protected areas by promoting the concept of Forest Landscape Restoration (FLR) which aims to regain ecological integrity and enhance human well-being in degraded or deforested forest landscapes. This approach aims to strike a balance between the ecological, social, and economic requirements for sustainable and equitable resource use, based on the outcomes of inclusive, land-use negotiations. In East Africa, restoration is being used as a tool to promote both livelihood security and forest conservation. The area of enclosure has risen from about 1,000 hectares to over 250,000 hectares. IUCN supports the Code of Conduct for logging companies in Central Africa that was signed by eight logging companies holding 5 million hectares of timber concessions in Congo and Gabon. These companies are developing a transparent and independent monitoring mechanism to implement reduced-impact logging and improved wildlife management.

2.5 Experience from the field

IUCN has recently embarked on a project supported by an internal 3I-C Fund (i.e. innovation, integration, information and communication) to explore and better understand the links between poverty reduction, sustainable livelihoods and ecosystem management. Part of the fund is dedicated to documenting IUCN projects that have clearly demonstrated these links and subsequently influenced policy makers and

economic planners. The latter is particularly important because an emerging lesson from 20 years of Integrated Conservation and Development Projects (ICDP) has been that few of their achievements have been 'scaled up' to economic planners. We describe below results from some of the successful experiments launched by IUCN.

2.5.1 Uganda

IUCN supported a project that also includes Tanzania in Africa, and Lao PDR and Viet Nam in Asia to provide an insight into how the mainstreaming of environment in conservation and poverty reduction policies is being done, and whether it has succeeded in securing sustainable livelihoods. The findings are encouraging and provide sufficient ground to make additional improvements in linking ecosystem management to sustainable livelihoods. Among many achievements, the project created an enabling environment for planning, resource mobilisation and allocation, institutional strengthening and, to some extent, capacity building. Secondly, people's access rights to natural resources for their survival have improved with policy provisions on multiple use, collaborative management, use of financial incentives, management plans and by-laws. This has been true in forest, park and wetland ecosystems. In fisheries, fishing regulations and fiscal disincentives have been introduced so that fishermen's fishing activities are mindful of the needs of future generations. That element of social equity is yet another tenet for a sustainable livelihood approach.

Positive outcomes were achieved from pilot activities to the extent that these activities could be recommended for replication in other parks. As a result of these interventions the following outcomes were observed:

- improved park-community relationships
- improved legal access to and decision-making by communities concerning the natural resources of the park as provided by the Collaborative Resource Management Agreements
- increased community sense of ownership and readiness to co-manage with the park
- reduced incidence of animal damage and conflict between park and community
- community livelihood opportunities increased through income generating activities
- improved agricultural productivity.

Constraints

Despite numerous micro win-win projects, the national indicators for ecosystem management in Uganda have not yet shown a drastic improvement. One problem is that the concept of mainstreaming environment is not yet well understood and practised. To some, it is an add-on responsibility, often without budget support, hence the need to develop capacity in mainstreaming and tools for the same purpose. The second problem is funding. Conservation is not able to compete with other sectors such as education, health and agriculture in resource allocation because its contribution to the treasury and overall development is somewhat widespread or comes after a long time. The third problem that has to be realised is that enabling a policy and legal environment is but one of the necessary ingredients needed to transform our natural capital into wealth creation, poverty reduction and enhanced values of natural resources. To that end, investments need to be made in technology transfer and improvement, research and training, capacity building, governance and the provision of incentives that will induce the private sector to voluntarily respond to environmental management. Fourthly, the struggle by the poor to eke out a living from ecosystems, to undertake micro-enterprises, and to comply with government policies as they fight poverty dictates that conservation agencies must be ahead of them in developing their own capacity in policy analysis, enterprise development and sustainable livelihood approaches in addition to conservation.

Laws and policies prior to 1992 were extremely weak in linking conservation to livelihoods either because they did not prescribe approaches that stimulate voluntary compliance or because they only depend

on command and control instruments. Included in this category are the Fisheries Act 1964, the Soil Conservation (non-African law) and the Cattle Grazing Act.

However, the policies, laws and strategies that came into force before 1997 but after 1992, did also emphasise environmental management for socio-economic development. They may not have been as explicit as those after 1997 on issues of poverty reduction and sustainable livelihoods but they nonetheless opened up an enabling environment for appreciating that conservation was pro-people and had to be by the people.

There are other instances where policies can be disincentives. One of them is the policy on 'reserved species'. For example, Mvule, which is reserved, was found unattractive for planting by farmers in Iganga because of government control over its harvesting. Yet studies established that trees act as security against risk and drought, factors that expose households to vulnerability. On private land, the studies established that the best practices were those whereby tree growing and conservation followed a holistic approach. In those initiatives there has been extension advice on tree planting into a strategy that focuses on land and crop management by NGOs.

Secondly, the state agencies with a mandate to manage the ecosystems are not taking sufficient proactive measures to translate the resources under their jurisdiction into viable economic enterprises. For example, many potential income-generating products from Uganda natural ecosystems (forests, savannah and wetlands) with high domestication potential are not being given sufficient attention by policy makers. Other problems explaining poor linkages are rudimentary technologies and weak organizational structures of the resource users.

On private land there is still heavy degradation of forests because of the lack of incentives, and individuals find it attractive to convert their forested lands to other alternative land uses. While there may be several promising cases of 'win-win' solutions, the national picture shows a negative trend of forest cover. This implies the economy is still falling short of a scale of replication to generate a positive turnaround. Much of the degradation is taking place on private land where, in relation to other land use options, forestry conservation is losing out. While forests have multiplier effects in relation to agriculture, there are no policy instruments or incentives enabling private individuals to conserve the patches of forests for their societal (as opposed to private) benefits. Presently, the immediate motivation for conservation and development agencies to use the concept of sustainable livelihoods or poverty reduction is to attract attention and win favour in the processes and decisions of allocating financial resources.

By way of example, the Wetlands Sector Strategic Plan 2001-2010 is financed under the Poverty Alleviation Fund (PAF). To qualify for PAF funds many criteria must be satisfied. But as institutions manage to access funds whether under PAF or the Medium Term Expenditure framework, there seems to remain another problem, namely that of failure to mainstream environment (as a cross-cutting issue) in the development planning processes. This challenge has not only been recognised by the Government but also by some development aid agencies. It is therefore high time that both the government and conservation agencies resolve these issues. As a starting point, it should be recognised that the resource users are many, and not all of them are at the local level or adjacent to the resource. The resources may have direct use (consumptive) values e.g. firewood or medicine, or non-use and ecological values e.g. climate amelioration and water purification. Some may be of subsistence nature, while others may be commercial or both.

2.5.2 Lao PDR

A case study by Jason Morris on sustainable harvesting regimes for bitter bamboo shoots and wild cardamom in one poor village in the northern mountainous province of Oudomxay showed that the sustainable harvesting regime for bitter bamboo in Oudomxay generated the most impressive results on poverty reduction and livelihood development in the NTFP Project and continues to be a shining example in Lao PDR. The case study showed that the sustainable harvesting regimes played a major role in reducing poverty and sustaining local livelihoods, while providing villagers with enduring incentives and adequate capacities to manage village forests. The achievements were also remarkable for their equitable distribution among villagers, their capacity to reach the poorest households, and the interest they raised in NTFPs among development and conservation organizations.

In 1996 IUCN began work in Nam Pheng village, focusing on the management of NTFPs. Since then, poverty rates have fallen by half, food security has been attained, child mortality has been eliminated, school enrolment has doubled (over half are girls), and domestic savings have increased. The village acquired new infrastructures and services, while households' range of expenditures widened, improving the quality of life and productivity. Although many different factors led to these achievements, improved NTFP management and marketing clearly played a key role, as illustrated by their predominant position in household economies and villagers' testimonies. Today, collection of bitter bamboo, cardamom and other NTFPs continues to be a major source of income for the majority of households in Nam Pheng.

On the negative side, it must be admitted that there has been no scaling up of such efforts, and lessons learned on policy constraints have had little impact on government policies, as discussed later.

2.5.3 Viet Nam

A case study for Viet Nam showed that the IUCN project brought income benefits to poor communities, secured supplies of basic materials such as fuel wood and timber, introduced new technologies, and recuperated degraded soils for cultivation. However, challenges remain for the project to meet the goal of helping the poorest people who are often the most dependent on natural forests and were frequently excluded from participation because they lacked land, labour, experience and/or social and political influence. Conversion of common access fallow lands and regenerating forests into privatised cultivation areas suggested a potential for unintended negative impacts on the poor, women and children who depend on these lands for fuel wood and other NTFPs. The project's hypothesis that improved living standards reduces unsustainable forest exploitation still needs to be tested empirically.

In light of these challenges, a few recommendations can be given here. The first is that while NTFP commercialisation can bring economic benefits to poor communities with reasonably good market access, special attention needs to be given to study its impact on the poorest households, women and other NTFP collectors that may or may not be participating in the project activities. When common access fallow lands and regenerating forests are converted into private agricultural holdings, the benefits to the middle poor are at the cost of the very poor. To avoid exclusion of the very poor, emphasis should be given to NTFP species that require low-inputs such as vetiveria grass, or alternative activities suitable to the needs and conditions of the very poor and other socially disadvantaged groups.

Second, links between livelihood improvement and forest conservation need to be monitored more closely. Raising awareness about the economic values of NTFPs also has the potential of increasing collecting pressures on natural forests, perhaps especially by the poorer households that cannot afford to invest in domestication models. Neither does improved income automatically mean reduced collecting. Higher income can also mean higher consumption patterns, or households may use economic gains from NTFP domestication to invest in less conservation-friendly activities, such as pig-raising or rice wine production, both of which have high fuel wood requirements. These type of scenarios need to be monitored closely so that they can be intervened upon appropriately.

Finally, analyses by the Marketing Unit showed the importance of paying attention to marketing aspects. One criticism of NTFP commercialisation is that it is notorious for boom and bust cycles. In the NTFP Project, the Marketing Unit provided information on market conditions to help determine production scale and know whether to invest in different value-adding activities such as primary processing. Experiences of the Marketing Unit in introducing primary processing also showed that understanding and responding to these opportunities is a process that requires time and involves many other factors beyond straight profits. From a conservation perspective, market analyses also need to be linked with impacts on natural resources.

2.5.4 Cameroon

More than 59% of Cameroon's freshwater resources and 86% of the freshwater surface area is comprised of floodplains. Water shortage and inappropriate river and floodplain water management are major threats to the country's ecology and biodiversity, especially in drier areas. Over the last 10-15 years

the construction of dams and canals has been encouraged within and upstream of many of the country's floodplains, particularly by the Rice Development Authority (SEMRY), to encourage grain cultivation by the sedentary farming population. This has had devastating impacts on floodplain hydrology and ecology and has impacted heavily on the fishing and pastoral populations who traditionally rely on their freshwater resources and flooding regimes. Yet for the most part these values were not taken into account when irrigation schemes were constructed.

Reversing the effects of flood loss

Since 1979 the inundated area of the Waza Logone floodplain has been reduced by approximately 964 km^2 or almost 30% of the original flooded area, due in large part to the construction of a rice irrigation scheme by SEMRY. The reduction in inundated area has had a number of negative impacts on the ecology, biodiversity and socio-economy of the Waza Logone floodplain, including:

- reduction in crop agriculture
- loss of fisheries
- decrease in dry-season pasture
- loss of plant resources
- decrease in wildlife populations
- reduction in surface water availability.

Building on work carried out two decades ago, a number of options for setting up engineering works to allow for flood re-release in the Waza Logone region were identified in the early 1990s. Pilot releases of floodwater from the Logone River were subsequently implemented in 1994 and 1997. These modified and opened the channels of two watercourses that connected the Logone to the Logomatya and had been blocked by the SEMRY works. These resulted in an annual increase in the area flooded of around 200 km^2 and led to a marked recovery in the number of water birds and certain mammals, an increase in fish production, improvement and extension of pastures and changed agricultural opportunities.

A large amount of donor and government funding has recently been made available for projects to address poverty reduction concerns in Cameroon. To date, proposals have focused mainly on the provision of basic services, infrastructure and income-generating activities for the urban and rural poor, rather than on environmental conservation and restoration activities. The results of IUCN's intervention presented a convincing argument for investment in flood release measures in the Waza Logone floodplain as a mechanism for rural poverty reduction and sustainable livelihood development, and also highlighted the high economic costs to poor rural populations of having failed to take environmental values into account when the original investment in the SEMRY irrigation scheme was made.

2.5.5 Sri Lanka

IUCN Sri Lanka is extending technical and operational support to the government of Sri Lanka on a five-year, GEF-funded project on 'Conservation and Sustainable Use of Medicinal Plants'. The project identified the local communities living within selected Medicinal Plant Conservation Areas (MPCAs) as the primary target group. Each MPCA set up a demonstration medicinal plant garden, processing centre, an ayurvedic dispensary and an information centre. The aim is to actively engage the communities in promoting sustainable conservation and use of medicinal plants. At the moment, the demand for medicinal plants for Ayurveda in Sri Lanka exceeds local supply, and 60% of the medicinal plants are imported.

IUCN has also succeeded in pointing out the poverty reduction potential of another resource, small tanks. Sri Lanka's tanks not only supply irrigation water, they also constitute one of the richest sources of wetland biodiversity in the country, and provide domestic water supplies and natural resources to millions of people. Traditional tank systems are, however, under threat from multiple sources, including upstream water

allocation decisions that marginalize traditional tank systems in favour of seemingly more productive uses such as modern large-scale irrigation and hydropower, as well as from siltation and sedimentation arising from unsustainable land use practices in upper catchments. IUCN undertook an economic valuation of the 429 tanks in the Kala Oya basin for cultivation, aquatic resources, water supply, commerce and fisheries. This valuation showed that the average benefit is US$ 425 per household, and that the tanks are of special importance to poorer households. It also demonstrated that, without rehabilitation of the tanks, any solution to loss of water storage would be short-term and yield lower total economic benefits. The study showed that the desilting and rehabilitation of tanks yields the highest net benefits for poverty reduction and the environment. The findings of the Kala Oya study underline the importance of taking into account livelihood and environmental values when land use and water allocation decisions are made (more details at http://www.waterandnature.org/econ/CaseStudy09KalaOya.pdf).

2.5.6 Nepal

IUCN has been active in Nepal, with SDC support, since 1985. The community mobilisation has given rise to the formation of numerous groups at the local level. These groups are articulate and beginning to exercise an influence on local government. The message of IUCN – linking conservation and development of better livelihoods – has passed very well and has the support of communities and local government. At the central level, IUCN is regarded as the main conservation policy advisor to government. The linkage promoted by IUCN between conservation and better livelihoods is seen with promise by communities and local government.

Wetland policy and practice reflects principles of both conservation and sustainable use and provides the basis for strong participation with and benefits for local communities (many of whom are poor, wetland-dependent ethnic minorities). IUCN has helped to support the government's National Wetland Policy (2003).

Nepal's wetlands are important habitat and staging grounds for globally important biodiversity and provide important ecological services. Wetland users are primarily poor communities from ethnic minority groups who lack voice and whose rights to manage and benefit have been marginalized. IUCN Nepal is a leader in this field that has received limited attention in Nepal. IUCN's small-scale demonstration work sets the stage for further demonstrations and capacity building.

Although elements of livelihood improvement measures are visible (mobilisation, training, sapling production, market investigations) these have yet to be translated into income gains. The list of issues where legal and regulatory questions arise includes: tenure; securing rights to benefits from NRM for user groups in general and Dalit (landless belonging to the lowest caste) groups in particular; community forestry and forest access; NTFP commercialisation and taxation; and conservation area status. The signs are, for the moment, quite promising, but these groups underlined the fragility of their status, both in terms of application of knowledge and in the securing of rights to the prospective benefits. Additional consolidation of skills and rights is required.

Poverty issues related to the landless in all three areas on which IUCN is working are less prominent. Solutions are of course less easy to find, and these groups are less able to benefit from the solutions proposed by IUCN since, among other things, they lack land on which to produce NTFPs. Far more evident is the gender orientation, with a strong emphasis on the creation of women's groups and the strengthening of their capacities. The initial signs are positive, though impacts on conservation and better livelihoods are for the moment quite modest. The main factors affecting economic viability are access to local and regional markets and locally added value. These factors should now be given priority attention by IUCN.

Issues of gender, poverty and social equity (GPSE) need to be better mainstreamed into policy and the practice of NRM. Social exclusion based on gender, caste and ethnicity are at the heart of inequitable development in Nepal. While virtually all NRM institutions (government, NGO and International NGOs) mainstream GPSE into their work, results have been mixed. IUCN should use its convening role to facilitate learning among institutions and strengthen greater national action. Accounting for NRM's contribution to GPSE makes a strong case for the sector's role in meeting PRSP and MDG goals. This should result in greater national support and budgets for pro-poor NRM.

2.6 Emerging lessons and recommendations

While many recent projects launched by the IUCN and supported by the 3I-C Fund have done well to explore and understand the links between poverty alleviation, sustainable livelihoods and ecosystem management, the concept has still not been translated into reality in all the activities (especially older ones) of the IUCN, where concern for the poor may still operate more or less at the rhetoric level. For instance, in Uganda up to 1998 one of the KRAs was 'Reducing the negative impacts of local communities on biodiversity values'. Of course, in the last phase of the Project that began in July 1998, the project was guided by the fact that communities impacted on the ecosystem. Consequently, the objectives of the project were refined to: improving the well-being of park ecosystems, and improving the socio-economic well-being of the people living adjacent to the parks. But even then no indicators were developed to measure the benefits flowing to the people, especially the poor.

To give another example, the Pakistan Country programme of IUCN is the single largest country programme of IUCN. IUCN has an excellent reputation in Pakistan and its programme has been credited with having a substantial positive impact on the country's environmental agenda. It has been instrumental in some of the major developments such as the National Conservation Strategy. The programme has been built over a 15-year period and now has an annual budget of about US$ 3.5 million and staff of about 330, including programme and project staff.

However, a review of the IUCN Pakistan Constituency, Programme and Management (2002) indicated that poverty reduction is often not an explicit objective of IUCN projects. The current Strategic Framework (2000-2005) identifies four 'key' strategic objectives:

1. integrating environment and development
2. supporting institutional and human resource development for the environment
3. facilitating the creation of a supportive policy and legal framework
4. increasing popular support for the environment.

It was unclear to the Review Team whether the IUCN strategic and future-looking programme is addressing the four strategic objectives effectively. Indeed the Review Team felt there was considerable doubt that the programme was indeed focusing on the environment-development nexus as the Strategic Framework states.

Having noted that IUCN could capture new opportunities in Pakistan, the Review Team observed that the programme is somewhat constrained when tackling new areas of work because the staff is over-committed to current projects. The Review Team made 30 recommendations on how IUCN Pakistan can improve its undertakings with members and donors, programme and projects, and management and administration. Here again, the concerns of the poor were not noted.

Farm forestry

IUCN may also consider having a clearer and stronger strategy to increase wood production on farmlands, as in China and Costa Rica. As public forests should largely meet the social and environmental goals, the rapidly growing commercial need for forest products has to be met from the farm sector. Much of the focus of IUCN has been on community management and regeneration of public forests. Although they serve social needs they do not address the supply problems of a growing economy.

However, for the farm sector to contribute to meeting market demands will require new laws, secure tenurial arrangements, credit, and transparent, predictable pricing and marketing policies as incentives. Often, forest bureaucracies impose restrictions on the harvesting and transport of wood, even that emanating from private lands, with a view to preventing theft from forestlands.

Such restrictions are based on assumptions about the behaviour of rural people, assumptions that are widely shared by bureaucracies all over the world. They believe that farmers cannot be trusted with a resource that only yields income after several years. Such a prejudiced view has, however, no empirical

basis. Besides, such controls act as self-fulfilling prophecies: they deter protection and promote irresponsible felling. To effect a change in people's behaviour one should start by trusting them with trees, at least those on their own lands. Some decades back, similar apprehensions were expressed regarding giving poor people land and security of tenure: it was said that they would only produce for consumption and not for the markets, and that more land would make them lazy. Experience from all over the world has shown that, once assured of security of rights, peasants have proved themselves worthy of trust through their hard work, rationality and market orientation.

Similarly, the links between forestry, pastures and watershed development are not well understood in IUCN projects and are not given sufficient importance. Integrated land use planning is not being attempted, and farms and common lands adjacent to forests receive low priority in projects. As farmers increasingly turn to agroforestry, they would like to know the relative degree of competition or complementarities between trees and crops. The changed scenario of community forestry and agroforestry requires thorough knowledge of the range of roles that each tree could perform and matching it to the local land use system and needs of the community/farmers.

The complementarities between agriculture and forestry through a watershed approach should be given greater importance in the IUCN projects. The poor would be quite willing to protect forests if it were to help improve the moisture regime for their crops or improve their incomes through wasteland regeneration.

IUCN may like to include farm forestry, especially complementary agroforestry, in their field projects, both for execution and policy advocacy.

2.6.1 Focus on policy issues

One of the reasons for limited success on the poverty front is the hard reality that both poverty and environmental degradation are caused by macro-policies and issues of political economy on which IUCN has little control and which cannot easily be changed through delivery at the field level.

It is now well established that the main causes of ecological decline are rooted in bad policies, concessions, perverse subsidies, lack of appropriate monitoring and evaluation and poor governance. Clearly IUCN's thrust, in addition to establishing its credibility through micro-projects, should be to focus on these issues through policy advocacy, and this should ultimately help donors and national governments adopt better policies.

For instance, in Cambodia 28% of the country's arable area has been provided to companies as agricultural concessions for commercial farming. Many concessions are reported to be held for speculative purposes and are left to lie fallow. The picture is worse for forests. Thirty companies hold two-thirds of the country's estimated forested area as forest concessions. Forest and fisheries concessions tend to be heavily guarded, thus preventing the poor from foraging for diverse foods.

Global Witness (2002) argues that Cambodia would be better off if all 15 of the timber companies given concessions in the country were kicked out. It points out that, while the state earned US$ 92 million from the forestry sector between 1994 and 2000, massive floods in 2000 – blamed by the UN on deforestation – cost the country an estimated US$ 156 million. It also asserts that Cambodia's forestry law is out of date, patchy and riddled with loopholes and opportunities for committing forest crimes. 'Corruption is widespread: every signature, authorization and inspection is saleable'.

Concerns over concessions relate to a range of issues such as: transparency in the system of granting concessions; the need for improved concessions management planning; security of land tenure for communities living within concessions; and the scale, pace, and nature of forest exploitation. In a December 2002 report, UN Special Representative Peter Leuprecht expressed his concern about land concessions in Cambodia:

'The Royal government has pursued a policy of granting large-scale land, forestry and other types of concessions to private enterprises. The experience thus far has shown that this represents a serious threat to the well-being of those living on such territory and has also contributed to the problem of access to land for the general population' (Oxfam, 2003).

These issues should be raised by the IUCN with policy makers so that international pressure can be mounted to change such perverse and anti-poor policies.

In the IUCN study on Lao PDR, it has been unequivocally stated that current forestry trends in Lao PDR are highly unsustainable. Government policy implicitly sanctions only high intensity type harvesting, which leads to poor harvesting practices, unnecessary levels of forest degradation and significant environmental damage.

The Forest Management and Conservation Programme (FOMACOP), which operated in Lao PDR from 1995 to 2000, and the long-running Lao-Swedish Forestry Programme, both piloted models for community forestry in Lao PDR whereby forests within the traditional village territories were co-managed by government and local villagers. While both have been deemed successful (by subsequent external reviews) in establishing the necessary agreements and establishing and implementing management plans, according to Lao PDR's National Human Development Report (NHDR), 'when it came time to actually harvest and sell the logs, that is when problems arose. In the log sales from the FOMACOP pilot areas in 2000 the village agreements were set aside, and systems developed by the project for transparent logs sales were bypassed in favour of the old non-transparent system of sales to favoured traders with substantial loss of national revenue.'

The Prime Minister's Order (PMO) No. 11, issued in 1999, increased centralisation of the timber industry and made it impossible for villages to participate in selling logs at market prices, by requiring that all wood sales be conducted directly by the government (World Bank, 2003d). Other recent orders (PMO 10 and PMO 15) are also seen as interpreting the Constitution, Forestry and Land Laws narrowly as regards participation of various stakeholders in forest management.

Of particular limitation seems to be the ability of villages to share in the financial benefits of sustainable forest management. The FOMACOP experience demonstrated that village forestry can introduce effective sustainable management over well-stocked forests and, if allowed to function, can yield benefits to both the participating community and the public treasury.

It has also been suggested that an additional driving force behind the inhibition of community forestry in Lao PDR grew out of concerns regarding perceived competition between forest management at the community and national levels. However, a spatial analysis carried out by the World Bank, the Swedish International Development Cooperation Agency (Sida) and the Government of Finland indicates that village forest management and government forest management can be complementary approaches, given the relative distribution of villages and forestland throughout the country.

NTFP resources are already coming under increasing pressure, particularly as a result of the widespread negative impacts of land-forest allocation on traditional livelihood systems, but also due to other factors such as population growth, intensification of commercial demand and growing illegal trade. Forest field staff also cites increasing pressure from outside traders on what have traditionally been locally used NTFP sources. In addition, the PPA found that culturally imposed restrictions are starting to be ignored as poverty increases.

In its field projects IUCN has been concentrating on asset improvement, but the problems associated with degradation of common grazing lands and forests are more due to the absence of clearly and equitably defined common property rights and weak institutions that deny the poor access to assets.

Even when IUCN's field projects are successful, its partnership may not always be with the poorest, especially women, as the Viet Nam case study showed. Therefore the important concerns in local capacity creation and poverty reduction that need to be addressed in IUCN's future work seem to be (1) how to deal with local inequities and exploitative social relations; (2) how to address inter-village problems and opportunities; and (3) how to initiate market and processing reforms.

Lastly, many governments have attempted decentralizing the control over forests to local governments. IUCN may consider making a comparative study so as to enhance the capacity of local and national governments in managing natural resources. The relationships between local governments and forest users can be tense, as recent stories from China and the Philippines indicate. Any activity in the forested areas necessarily demands the accommodation of multiple interests. No forest is any longer a single stakeholder affair. More attention needs to be given to fostering multi-stakeholder processes that are more

effective in representing disadvantaged communities' views in accountable ways and negotiating their interests. Support should be provided for processes to develop shared frameworks about the aims of forest management and its mode of implementation to achieve a more just balance of public and local interests.

2.6.2 Policy advocacy

To sum up, poverty originates in the structural features of society that need to be redressed at the macro-level only. The poor are embedded in certain inherited structural arrangements such as insufficient access to productive assets as well as human resources, unequal capacity to participate in both domestic and global markets and undemocratic access to political power. These structural features of poverty reinforce each other to effectively exclude the poor from participating in the benefits of development or the opportunities provided by more open markets. In such a system, even targeted programmes of IUCN for poverty reduction carry transaction costs due to the institutional structures that mediate the delivery of resources to the poor.

IUCN should therefore consider evolving interventions aimed at creating an enabling environment and facilitating changes in the larger policy and institutional frameworks within which direct interventions and empowerment processes would then operate. These would include, for instance, opinion building and perspective building at multiple levels, research studies, platforms for collective analysis of the implications of research findings and initiatives to disseminate lessons learned from programme implementation. The present resource allocation (both in terms of staff time and finances) in IUCN is heavily weighted in favour of micro-interventions, which may not bring sustainable benefits to the poor unless combined with macro-level changes.

The disadvantages of focusing most of the attention towards direct micro-level intervention schemes are:

- IUCN may be spreading its scarce resources too thinly
- with limited funds only a few thousand can benefit, whereas the number of poor runs into billions
- as the amount of assistance is small, senior government officials at the national level do not take any special interest in the projects funded by IUCN, with the result that learning from such assistance does not take place, nor is it up-scaled. Sustainability is therefore in doubt.

On the other hand, the advantages of indirect intervention schemes are many and would allow IUCN to maintain an international perspective, with its studies and reports on sectors that impinge upon the lives of the millions, and would thus be able to provide intellectual leadership and direction to other donors, research organizations and NGOs. Despite limited funding IUCN has to be different from other small donors, and should have a broader perspective and lead other donors in terms of concepts and vision.

Therefore IUCN's strategy should strike a happy balance between project delivery and policy advocacy combined with dissemination of knowledge. This, however, is not to deny the role that IUCN is already playing in policy advocacy. IUCN's policy influence comes through three main channels: (1) direct work with government partners to develop and implement policies; (2) using field demonstrations and/or studies to advocate for policy level change; (3) participating in or coordinating various forums (workshops, task teams, advisory boards) to provide feedback on a broad range of policy issues; and (3) strengthening national and local capacity to influence policy (via communications, stakeholder forums or direct capacity building). In future this role needs to be stressed even further.

We discuss below various policy aspects of poverty-conservation links that should be the focus of IUCN in its future programmes.

2.7 Environmental governance

Over the past few years, the issues of poor governance, corruption, illegal logging, unclear tenure, use rights and associated trade have become increasingly acknowledged as key barriers to achieving sustainable management and conservation of natural resources. Several initiatives, partnerships and intergovernmental processes have been launched by IUCN to address these problems. For instance, the IUCN Forest Conservation Programme works on forest governance issues at a variety of levels, but establishing good governance and strengthening the rule of law continues to be a major challenge for the sector.

Distortions due to external costs not being reflected in the price can be corrected through government policy and legislation. However, such a step would need effective delivery and a regime that is not under the influence of the polluters. The experience has not been very positive. While deterioration in the quality of governance has affected all sectors, it has been particularly fatal to environmental issues, as here government has elaborate laws and regulations on almost every conceivable topic from hazardous waste to wildlife, but monitoring and enforcement capabilities are weak and often subject to extraneous considerations. Corruption plays a major role in the misuse of natural resources and weak enforcement of environmental regulations.

When the state is incapable of enforcing laws and penalising the offenders, disrespect for state institutions, laws and property increases. This leads to cynicism and lowers resistance to the taking or giving of bribes. This also encourages looting of the natural habitat. When people see corruption around them and realise that state institutions are not effective, they too join in the plunder of nature. Corruption also decides the choice of technology. Solutions that require large construction (such as large dams) are preferred and programmes that are software based, requiring intense interaction with the people, building their confidence and capability, are either not preferred or are poorly implemented.

Good governance is central to issues of poverty reduction as well as improvement in environmental quality. Good governance requires three basic conditions: decentralization (the authority structures must be decentralized and devolved); inclusiveness (decision-making processes must be participatory and all-inclusive); and accountability (government strategies and activities must be transparent and accountable to the populace).

IUCN involvement in global environmental governance can take a variety of forms:

- **Expert advice and analysis**. IUCN can facilitate negotiations by giving politicians access to competing ideas from outside the normal bureaucratic channels.
- **Intellectual competition to governments**. IUCN often has much better analytical and technical skills and capacity to respond more quickly than government officials.
- **Mobilization of public opinion**. IUCN can influence the public through campaigns and broad outreach.
- **Representation of the voiceless**. IUCN can help vocalize the interests of persons not well represented in policymaking.
- **Service provision**. IUCN can deliver technical expertise on particular topics as needed by government officials as well as participate directly in operational activities.
- **Monitoring and assessment**. IUCN can help strengthen international agreements by monitoring negotiation efforts and governmental compliance.
- **Legitimisation of global-scale decision-making mechanisms**. IUCN could broaden the base of information for decision-making, improving the quality, authoritativeness and legitimacy of the policy choices of international organizations.

One of the most important roles that IUCN can play in global environmental governance is to provide up-to-date information on critical issues. Governments often turn to IUCN to research gaps that stand in the way of effective decision-making. Thus IUCN should be dedicated to the production of accurate, up-to-date research and data on the most pressing environmental issues.

IUCN's involvement in global environmental governance would enrich the process and strengthen outcomes, as it has already done in a number of places and in a number of ways.

2.8 Livelihoods and livelihood security

To improve livelihood security, policy options for addressing poverty-environment interactions should focus on improving the asset base of the poor. Assets include natural capital (forests, water, land, fish, minerals); social capital (relationships of trust and reciprocity, groups, networks, customary law); human capital (skills, knowledge, beliefs, attitudes, labour ability, good health); physical capital (basic infrastructure); and financial capital (monetary resources).

If institutional mechanisms are developed so as to permit sustainable use or even betterment of the environment there would be good possibilities of improving livelihoods since the natural resource environment improves the resource base of the poor and can reduce poverty, which in turn can strengthen the capability of the poor to enrich their lives.

However, there are real barriers to making this common sense a reality. By definition, poorer people lack capital in the form of land or investments and are excluded from many financial services. Patterns of settlement, travel to work, and the changing demographics of family and social life can all make collective endeavour more difficult. Systems of welfare and taxation, through the operation of 'poverty traps', can penalise initiatives and undermine prospects for longer-term success. Each of these barriers can be addressed, but to do so requires significant changes in the current distribution of resources and power, including gender relations in households and in the wider economy. The challenge to the promoters of sustainable development is whether or not they are prepared to take on board the vested interests that sustain the inequitable and unsustainable status quo.

For instance, as already discussed, despite very high dependence of the people in Cambodia on natural resources such as land and water, almost 70 percent of good forests, fisheries and agricultural land has been given to concessionaires, thus denying the people access to productive resources. Not only in Cambodia, but elsewhere too, poor people need secure rights over resources. If we accept that giving poor people secure rights to and responsibility for natural resources is a powerful tool for poverty reduction, then governments need to take several key steps, including:

- reforming policies that constrain, and enacting new policies that enable responsible community stewardship of natural resources
- improving poor people's access to information and well-designed incentive schemes so that they are better equipped to manage risk and uncertainty
- encouraging and rewarding stewardship of ecosystems essential for mitigating the adverse impacts of extreme weather events
- strengthening the capacity of environmental agencies to support the management and use of 'publicly owned' natural resources by local communities.

Box 2.1 Reclaiming mangrove forests for livelihoods in Thailand

In the early 1980s the people of Pred Nai village in Thailand took action to halt charcoal production and shrimp farming that was destroying nearby mangrove forests. Having successfully reclaimed effective control over the mangroves, the villagers began to restore them through replanting and protection. Their motive was to raise village incomes by re-establishing a functioning mangrove ecosystem that would support crab harvesting. Pred Nai villagers undertook conservation activities because their livelihoods depended on biodiversity, not for the preservation objectives that conservationists might pursue. In doing so they saved a resource that government authorities had previously been unable to protect.

Based on experience from around the world, there are 'win-win' options that can build partnerships with poor people for creating both more robust livelihoods and healthier environments. However, these options are not always obvious and, often, conducive conditions need to be created for synergy to take place. These options simultaneously pursue two goals: reduced poverty and better social equity as well as enhanced environmental quality. Improved governance is an important vehicle for achieving these goals.

Implementing policy to address the poverty-environment nexus requires both normative and operational shifts by government agencies, international development organizations, NGOs and other civil society actors and the private sector, as well as strategic interventions.

2.8.1 Normative shifts

Building partnerships with poor people requires a commitment to stakeholder participation in decision-making as well as a willingness to experiment and fine-tune solutions to local conditions. But there are also some fundamental changes that need to take place in the way policy-makers at all levels regard poor people. Some of these shifts include the following:

- empowering the poor to identify their own solutions, not seeing them as the problem, and using people-centred frameworks for planning and implementation
- engaging poor people as partners not as beneficiaries
- creating incentives for the poor as well as for private sector entrepreneurs to mobilize resources for poverty reduction, and moving away from just exhorting poor people to mobilize resources
- seeing the value in giving the poor real ownership, not just a 'sense of ownership'

2.8.2 Operational shifts

Certain operational shifts are also required for success:

- counteracting the influence of power strongholds through governance reform, as expressed through improved accountability, transparency, and representation;
- moving to decentralized planning that facilitates participation and maximizes resource mobilization, which in turn ensures that services will be more relevant to the needs of communities and households;
- shifting towards more pluralistic approaches to decision-making that incorporate a range of stakeholders and can accommodate different interests and potential conflict, and developing community-based decision-making and transparent dialogue;

- employing a gender analysis lens that takes specific note of the relations between and the roles of men and women and seeks to ensure that women are not further marginalized through new policies and programs;
- revising the criteria for determining who are the people living in poverty to reflect not just income levels but also their access to assets and their levels of other social indicators such as health and education.

2.8.3 Vulnerability of human communities and approaches to counter it

Vulnerability is defined as the degree of exposure to risk, and the capacity of households or individuals to prevent, mitigate or cope with risk, whereas risk is the likelihood of occurrence of shocks and stresses plus their potential severity. To some degree, vulnerability will also be reduced as risk reduction measures take effect. For instance, households become less vulnerable as assets are retained, created or strengthened in the face of shocks and stresses, and as levels of income and expenditure become more stable or are derived from many sources.

The poor are particularly vulnerable to shocks and stresses. Environmental conditions can contribute to both long-term stress (e.g. gradual poisoning through polluted water) and short-term shocks (e.g. floods). Natural disasters like droughts, floods, fires and earthquakes increase poverty and hurt poor people by imposing human and economic costs, including loss of life, injuries, disabilities and displacement, as well as damage to agriculture, livestock and infrastructure. The destruction of assets can trap poor families into chronic poverty.

Developing countries face the brunt of natural disasters. Between 1990 and 1998, 94% of the world's major natural disasters took place in developing countries. Such countries have limited capacity to mitigate the adverse effects of natural disasters. Additionally, social factors such as settlements in hazardous areas increase the vulnerability of the poor to disasters. The poor are unable to afford safer housing or better infrastructure. Increasingly, environmental degradation and natural disasters cause victims – many of which are poor – to leave their homes in search of better conditions elsewhere. Environmental refugees pour into mega cities where they increase the number of poor people living on marginal and sometimes disaster-prone land. Global climate change is expected to increase the frequency of extreme climatic events.

Lessening vulnerability of the poor to disasters must focus on prevention, preparation and mobilization of resources. Infrastructure and neighbourhood improvement, diverse livelihood options and low-cost local initiatives (like agricultural cooperatives, food banks, environmental conservation and reforestation) can reduce vulnerability. In addition to risk mitigation, there is a need to extend insurance coverage to the poor, building on the experience of micro-credit schemes. Environmental resources such as wild foods are important safety nets in hard times.

Disaster reduction policies and measures need to be implemented, with a two-fold aim: to enable societies to be resilient to natural hazards while ensuring that development efforts do not increase the vulnerability to these hazards. Disaster reduction is therefore emerging as an important requisite for sustainable development in IUCN's programmes.

IUCN can reduce vulnerability to natural disasters by (1) stabilizing land on slopes above crowded areas in cities prone to flooding, (2) improving the natural hazard forecasting system, and (3) ensuring that the information is available to poor groups and that they have the ability to respond to it. Policies to reduce vulnerability may also include emergency income transfers, access to insurance and micro-credit.

2.9 Tenurial security

IUCN's Regional Environmental Law Programme, Asia, initiated a project on the relationship between rights to natural resources and livelihood security in two types of ecosystems and four countries in South Asia: wetlands (Bangladesh and Nepal); and forests (India and Pakistan) (http://www.iucn.org/places/asia/livelihood/). The project focuses on environmental security from the perspective of rights to natural resources and their impact on livelihood security – the 'missing link' between poverty, environmental degradation and conflict.

Initial findings from the field work indicate that it is not resource scarcity *per se* that leads to livelihood insecurity, but rather insecure rights to resources, whether scarce or abundant, for resource-dependent people and communities.

Tenurial insecurity may exist in a variety of situations, of which three are fairly widespread in the developing countries. First, when government is not able to enforce property rights and free access, though against government regulations (quite common). Second, when there are no property rights, and the resource is open access. Third, when there is conflict between law and policy, or between customary practice and formal law. Some examples are discussed below.

2.9.1 Problems of open access

Rivers and its tributaries are generally treated as open resources in the developing countries, and therefore it is quite common for people from different villages, districts, provinces or even countries to fish outside their borders. Either there is no specific legal tenure for fisheries, or even when laws and regulations exist in theory, these do not function well at the grassroot level. The problems associated with encroachment by outsiders are not only related to the destructive measures outsiders employ to exploit natural resources, local people are also put under pressure to over-exploit the resources. Local villagers may say: 'if we conserve the resources, how can we be sure that the others will do the same' or 'if we do not catch fish now (such as during fish spawning), or not cut trees, others will do it anyway'. This leads to the all-familiar 'tragedy of the commons' situation resulting in further degradation.

Open access in Bangladesh

Since 1989, IUCN in Bangladesh has facilitated debate and catalysed action on key conservation issues, building bridges between the government and the non-government sector, working through local institutions and national experts. IUCN is studying Tanguar Haor, freshwater wetlands in the north-eastern part of Bangladesh bordering India. The area is commercially important as well as significant for biodiversity conservation. Land and resource rights are unclear and undocumented, resources are over-exploited and there is a history of conflict over them. Tanguar Haor is probably Bangladesh's most important freshwater wetlands and in 2000 was declared the second Ramsar site in Bangladesh. It extends over 9,000 hectares and consists of a seasonally flooded depression dotted with 50 permanent bodies of water, or "beels". Tanguar Hoar is an important fish breeding area, and regularly supports 60,000 to 100,000 waterfowl, and is an area of high species diversity. About 30,000 people, clustered in 45 small to medium-sized villages, live in this area.

Prior to 2001, the fisheries resources of the Haor were leased by the Government to the highest bidders for a period of three years with provision of subsequent renewals. After 2001, leasing of fisheries resources was officially stopped and, on paper, fisheries were made an open access resource. Local communities generally have ancestral or historic rights to land in and around the villages based on traditional systems, but they do not have documented legal rights to land or resources. As a result of unclear land ownership, conflicts arise among villages, former leaseholders and local government authorities. This leads to over-exploitation.

Conflicting law & policy in Tanzania

The policies, laws and institutions relevant to crosscutting issues in NRM have rarely been harmonized in Tanzania. Most policies and strategies in place are sectoral in vision. Coordination modalities are absent or inadequate at all levels and even more so at the village level where the actual implementation of programmes takes place. Clear arrangements need to be worked out, including interactive consultations at all levels from policy formulation to planning of implementation interventions. While policies are open in avenues contributing to poverty reduction, most of the laws that govern natural NRM are inadequate to support policy commitments. While policies provide supportive ways for communities to develop natural resources, most legal frameworks for accessing natural resources are yet to be developed adequately in this direction. In general, most of them are still restrictive to communities and the farm sector.

Box 2.2 IUCN's experience of community involvement in forest management in Eastern and Southern Africa

Secure forest ownership is probably the most powerful stake a community can hold. It provides a stable platform upon which to develop a regime of sustainable management. Failure in state law to give legal weight to customary tenure and support the communal ownership of properties held in common has been the single most influential factor in defining the relationship of people to forests in the past century. Had state law recognised common properties as group-owned lands, the foundation for locally based forest management could have been nurtured and become a viable regime for retaining and sustaining forests in its own right.

A trend is underway to make customary rights in land legal, and this includes the right of people to own land in common. Through this measure communities are finding their tenure over local forest commons better secured. At the same time, forest strategies and legislation are being reformed, including new consideration of the role of civil society in forest management.

However, there is a need to proceed with caution. Decentralisation on its own is not a panacea. To be meaningful it has to be accompanied by effective democratic structures that ensure that less powerful groups within a community, such as women and the poor, are not excluded or further marginalized, and also by effective and workable conflict resolution mechanisms.

Non-renewal of fisheries concessions in Cambodia

In 1998 there were 167 fishing lots in the whole of Cambodia encompassing a total area of 850,000 hectares of the most productive fishing areas in the country, leaving little for the local fishermen. To correct the situation, 49% of the lot area (220,360 out of 452,640 hectares) was released for community fisheries in October 2000 to allow the poor to eke out their existence from fisheries. The reasons for the reform of the fisheries management system were many, including an increasing number of conflicts between the villagers and lot owners, controversies between the conservation of flooded forests and its conversion to agricultural land and outdated fishery legislation and its inefficient enforcement. Privatisation of most of the national inland fishery brought "family scale" fishers into conflict with commercial lot operators who, in spite of the law, have prevented subsistence fishers from accessing the resource through intimidation, violence and false imprisonment. The background for the reform can also be found in the inequitable and opaque nature of the allocation of the fishing lots and their management, which had a negative effect particularly on the poorest section of society.

After the temporary removal of fisheries' officers in February 2001, exploitation of fish ran out of control and anarchy replaced the corruption and inequality. Although the reform was a beneficial step, many regarded it as being too quick and radical since the communities were not ready for the responsibility of managing and supervising the areas handed over to them. The fishing lots were released to communities without regulatory or management structure, funding, or training to support the establishment of community

fisheries in these areas. The lots became, de facto, open access areas. The result was confusion over access rights, alleged uncontrolled exploitation, rampant irresponsible fishing and further conflict.

Two lessons follow from this example. First, open access is as iniquitous (and environmentally injurious) as government or private monopoly. Second, effective management by the local people cannot be taken as an automatic outcome of the transfer of resource to them; it is a process that needs support from donors and civil society, at least in the initial stages. Its effectiveness will also depend on the nature of the resource, as discussed later.

While further promoting local and customary practices to manage the communal resources, some forms of workable law enforcement systems should be in place to secure local / community control over resources. More secure community ownership will motivate people to manage resources productively. In addition, it is important that people do not receive conflicting signals about their rights from different government departments. Often government structure does not promote the most effective coordination among different agencies. There are overlapping tasks and responsibilities between the department of forestry, department of fisheries, extension agencies and research agencies, as well as with government agencies responsible for environment, irrigation, and land development, as in Lao PDR. It is therefore difficult to arrange agreements among many related parties.

2.9.2 Positive examples

Growing numbers of initiatives from IUCN aim to ensure that rural peoples can benefit directly from good stewardship of their resources. In Kenya and Tanzania, for example, the Maasai living around Tsavo, Amboseli and Kilimanjaro National Parks have developed community wildlife sanctuaries that benefit from wildlife dispersal areas around the protected areas. Here, local communities are involved at all levels of management in a range of conservation and ecotourism enterprises. However, experience in Africa and elsewhere has shown that community conservation initiatives can only work when supported by a national policy and legislative environment that enables devolution of meaningful authority and responsibility for natural resources. Participants at the Fifth World Parks Congress repeatedly stressed that clarity over tenure (of land and natural resources) is fundamental to the success of these initiatives, both in terms of conservation of biodiversity and in the fair and equitable sharing of its benefits (see Box 2.3).

Box 2.3 Namibia's communal area conservancies

Namibia's communal area conservancies are zoned by members of the community for their livelihood needs, including crop and livestock production, and wildlife and tourism. In return for responsible management, government gives the conservancy rights over consumptive and non-consumptive uses of wildlife. The legislation enables conservancies to: use, manage and benefit from wildlife on communal land; recommend quotas for wildlife utilisation and decide on the form of utilisation; and enter into agreements with private companies to establish tourism facilities in the conservancy. By mid-2003, 19 communal area conservancies had been formed and some of them are now financially independent.

Jones, 2001, www.dea.met.gov.na/programmes/cbnrm/cons_guide.htm; www.irdnc.org.na/cons.htm.

2.9.3 Tenurial issues in groundwater

Groundwater is also a common pool resource, but rich farmers consider this to be a private resource as they think they have absolute rights on groundwater below their land. In over-drawing water they are able to deny poor farmers the right to use the resource. The high costs involved in accessing this resource make the situation more complicated, and access to groundwater is mediated through technology and capital, rendering its exploitation iniquitous.

One reason why private enterprise is often unsustainable is that governments around the world continue to embrace policies that are harmful to the environment, or to the poor, or both. For example,

subsidies to water and energy users often lead to wasteful use of scarce resources and typically benefit the rich. It is estimated that, on average, consumers in developing countries pay 35 per cent of the costs of water provision.

Groundwater and surface water are the two sources of water available for human consumption. In some developing countries, such as India, almost all surface water sources are contaminated and unfit for human consumption, thus increasing reliance on groundwater. Since groundwater provides the greatest measure of security on all three fronts sought by farmers: timeliness, adequacy and reliability, the shift in favour of using groundwater for irrigation has accelerated in the last three decades, concomitantly resulting in water table decline. Moreover, wrong cropping patterns (see Box 2.4) has often denied water to the poor, besides causing environmental damage to the soil. It is ironical that Cheerapunji in India, known to be among the wettest places on earth with rainfall of about 11,000 mm, suffers from acute shortage of drinking water because all the rain that falls on the barren slopes quickly runs off the area.

Box 2.4 Water famine – how real?

During the summer months of April-May 2000, the Maharashtra Government in India was supplying drinking water through tankers in about 3,000 villages, many of which had a standing and well-irrigated sugarcane crops. Thus groundwater that should have been a community resource was being monopolised for a water-hungry crop by a few rich farmers who also took advantage of easy availability of two other scarce resources – electric power and capital. The rich farmers thus transferred the responsibility of satisfying people's need for drinking water to the state, with community solidarity becoming further punctured, and the state abetting in the overuse of water by supplying them with cheap power.

Planning Commission, 2000

In addition, the supply of pumped water is seriously affected by the growing incidence of pollution and contamination. The level of natural contaminants such as fluoride and arsenic and chemical pollutants such as pesticides and insecticides is high and rising. Excess fluoride and arsenic in groundwater based drinking water sources has given rise to crippling and incurable diseases such as fluorosis and arsenical dermatitis. Other quality related issues include biological contamination. Indiscriminate use of fertilizers and various agrochemicals along with unscientifically designed latrines and improper disposal of domestic wastewater have further contributed to the deterioration of groundwater.

Water shortages affect the poor in a number of ways. First, it has led to shortages of drinking water. Second, a large percentage of people in rural areas suffer from water-borne diseases like diarrhoea and cholera indicating the use of unprotected/unhygienic drinking water sources. Even in villages where quality is thought to have improved after treatment, the incidence of water-borne diseases did not come down since people fall back to original contaminated sources because the water supply from the new source is not dependable.

What needs to be done in respect of groundwater?

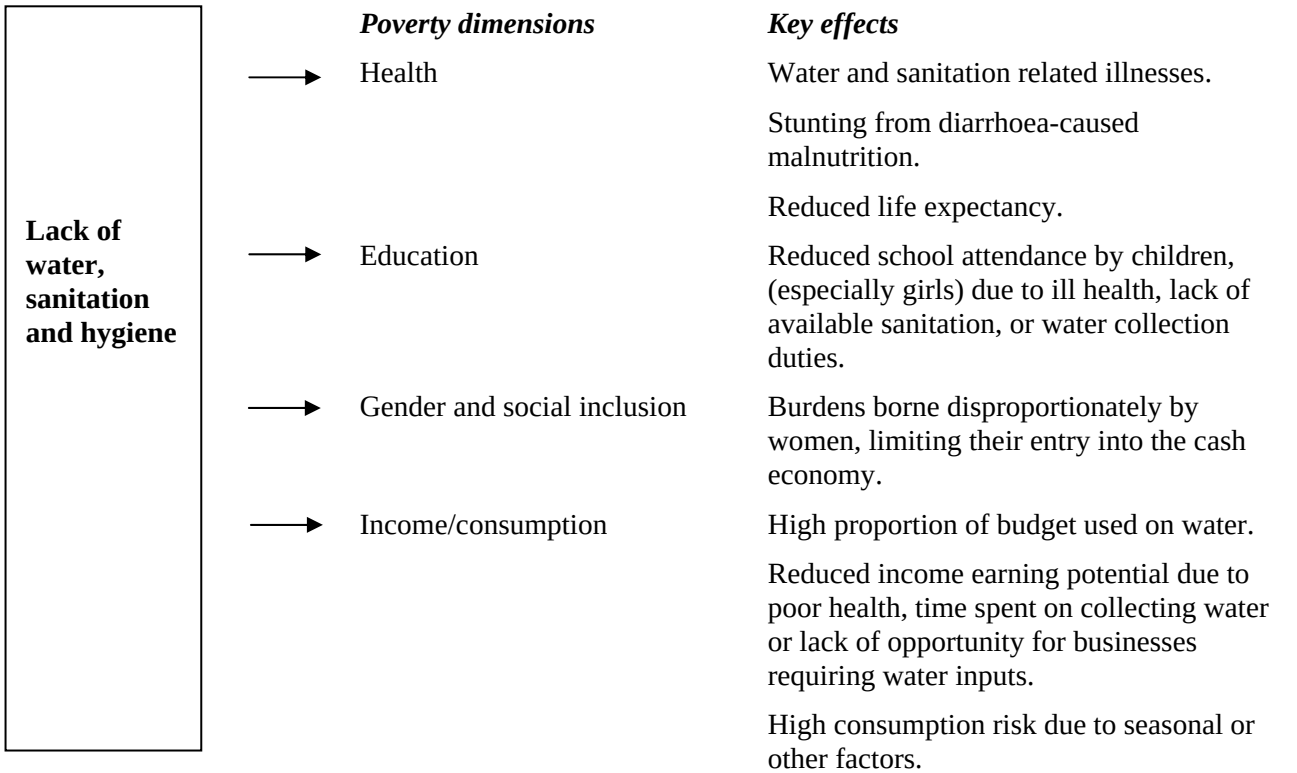
It is obvious that the past strategy of pumping donor money into this sector without looking at policy and institutional issues is not going to work. Therefore IUCN should incorporate the following principles to guide advocacy work in groundwater management, especially in rain fed regions:

- people's control over the management of water supply schemes
- water to be managed as an economic asset rather than a free commodity
- increased attention towards recharging groundwater through afforestation and watershed development programmes

- rainwater collecting in water scarce regions
- improving the quality of potable water
- restrictions on withdrawal of groundwater for irrigation, especially for water-hungry crops, in regions where the water table is falling.

IUCN may consider increasing its presence as regards intervention in groundwater management and sanitation in its project portfolio since it affects the poor in more ways than one, as shown below.

Figure 2.1 Linkages between poverty, water and sanitation



2.10 Operationalising benefit-sharing and participation

"Peoples' participation" has become a standard rhetoric in development literature today. Different actors interpret it differently. One view is that participation means getting people to agree to and go along with a project that has already been designed for them, or to obtain the support of a few leaders. This has been the approach in many development schemes that did not work. People did not identify themselves with the assets created such as the hand pump or trees planted, nor did they undertake the responsibility of maintaining the assets. "I manage, you participate", was the dominant underlying principle behind such projects. These tended to try to make people aware of their responsibility without giving them any authority to spend funds or manage assets. People's participation was then expressed not in a manner that would establish their rights over assets, land or its produce. The important question is, participation for whose benefit, and on what terms?

Participation should include the notions of contributing, influencing, sharing, or redistributing power and of control, resources, benefits, knowledge and skills to be gained through beneficiary involvement in decision-making. Participation is a voluntary process by which people, including the disadvantaged (in terms of income, gender, social status or education), influence or control the decisions that affect them. The essence of participation is exercising voice and choice, and developing the human, organizational and management capacity to solve problems as they arise in order to sustain the improvements.

Half-hearted measures towards people's participation have only resulted in wastage of funds with no gains. It must therefore be understood as a process by which the people are able to organize themselves and, through their own organization, identify their own needs and share in the design, implementation and evaluation of the participatory action. Thus, various elements of participation are decision-making at various stages, control and management of funds and resources, share in usufruct and final produce, and certainty of benefits. In other words, participation should not only stop at information sharing or consultation; decision-making and initiating action are important and essential components of participation.

2.10.1 Outcomes and indicators of participation

Participation in decision-making is an important capacity building process. As people participate in making new decisions and solving problems, learning takes place. This learning is internalised because it is accomplished experientially. It therefore leads to changes in attitude, behaviour, confidence and leadership. Newly acquired knowledge is therefore the first outcome of participation.

Empowerment is a result of participation in decision-making. An empowered person is one who can take initiatives, exert leadership, display confidence, solve new problems, mobilise resources and undertake new actions. Empowerment, it is hypothesized, is an important outcome of high levels of participation involving control over decision-making for a range of activities. Hence empowerment is a leading outcome of successful capacity building at the individual and institutional levels.

The third outcome is organization building. Decentralized programmes require strong local organizations. When local organizations get the opportunity to manage resources and support development, they can become stronger. Participation in decision-making is hypothesized to strengthen the capacity of local organizations to carry out activities. Local organizations can be a few people working on joint management committees, or a village council, or organizations of several villages.

These three outcomes of participation – learning, empowerment, and a vibrant organization – need to be measured in IUCN projects through observable indicators, which will vary from project to project. As already noted, IUCN projects are strong on community mobilisation, but still weak in measuring it. Each project must develop clearly observable indicators on people's participation so as to judge whether they are on track or not. Monitors and evaluators who should carry out mid-course evaluation and impact assessment should also use such indicators.

2.10.2 When to participate

One of the characteristics of participation is that it cannot be turned on and off like a tap, i.e. 'now you participate, now you don't'. Participation is an evolutionary process that gathers momentum and defies breakdown into neat, self-contained categories, except for analytical purposes. Establishing participation is particularly important in the early stage, because expecting responsible behaviour in the later stages is not only misguided but may result in ineffective projects. Participation should be viewed as a process that starts with the planning of projects and ends with maintenance and usufruct sharing, rather than as an element that can be injected in the later stages of a project whenever outsiders determine.

To sum up, ensuring the success of people's management of natural resources would require strong people's groups with enhanced management capacities which should then be harnessed by IUCN or the concerned government department.

2.11 Approaches for the empowerment of poor communities

Communities are often heterogeneous and may harbour considerable differences in interests and attitudes. It is often not enough to assume that community leaders will ensure that benefits accrue to the most needy. Communities are marked by social differences and relations of power and inequality around factors such as gender, race, social status, class and so forth. It is also important to consider local constraints in managerial capacity and not push reforms too far too quickly. Any attempt to empower local communities and target public expenditures to them should take into consideration these relations of inequality, but also the interests of different segments of the community. Forming a committee to manage common property resources is no guarantee of success. Some committees work and others do not. Research (Stalker, 2001) shows that four factors are associated with the success of a village committee:

- **Transparency**. People in a community need to understand how decisions are made and whether other people in the program are sticking to the rules. Transparency comes from holding open meetings, sharing minutes of meetings and publicly penalizing people who fail to follow the rules.
- **Participation**. A critical mass of community members must understand the potential benefits of the scheme and participate in setting project rules.
- **Inclusion**. Who participates and who benefits from the scheme is important. Committees should have conflict resolution mechanisms, should divide the benefits to include different community groups and should allow different groups opportunities to influence decision-making.
- **Ownership**. The community must feel a sense of ownership of the resource, believing it is their resource to manage and maintain over the long term.

In Africa, experience has shown that transparency and accountability are improved if whole communities, including women, are involved in decision-making (Box 2.5).

Box 2.5 Ensuring transparency in Zambia

The Lupande Game Management Area, adjacent to the South Luangwa National Park, supports a resident population of 50,000 people. Two hunting concessions in the area bring in revenues of about US$ 230,000 a year for local communities. Previously, distribution of revenues was managed through community leaders, but in the past six years revenues have been distributed in cash to villagers in an open and transparent manner. Individuals retain a portion of this sum while giving another portion to community projects (clinics, schools) approved by the whole community. Eighty percent of hunting revenues now devolve to village level. Participatory democracy and 'bottom-up' accountability have changed attitudes to the park and, since the communities now view wildlife as a private asset, illegal hunting has been reduced.

Source: Child & Dalal-Clayton, 2004

Decentralization and local empowerment is not a guarantee for environmental stewardship. In fact, the opposite may result as is noted in an assessment of the World Bank's 1991 Forest Strategy: 'Devolution of power to the local level has increased pressure on forests in view of the income, employment, and revenue needs of local government and their constituents' (World Bank, 2000c). Hence, it is important not to take a romantic view of community empowerment as the 'silver bullet' of poverty reduction and environmental protection.

Why does collective action succeed in some cases and not in others? Empirical evidence from India in the context of village forests suggests several clues (Chambers et al., 1991). First, most effective local institutions develop in small communities where people know each other. Collaboration is easier among small and homogeneous groups. Second, the topography of the upland villages makes their common lands visible from most of the dwellings so any unauthorised felling cannot escape notice. If a village is located inside the forest or at the bottom of a slope where the forest is located, individual households can easily provide protection services from their households, thus cutting down on protection costs. Third, hill and upland villages usually have better land resources. This attracts better management from the people, as its protection is more vital for their survival. On the other hand, once degradation sets in, people may become indifferent to protection. There are thus two syndromes: a valuable resource well managed because it is worth managing well; and a degraded resource neglected because it is degraded. Fourth, remoteness from roads and markets further helps in retaining mutual obligations, and discourages poaching by outsiders. Fifth, in remote villages, fear of reprisals from village elders deters too frequent abuse of common resources. In contrast, the old system of authority in the modernised villages has been undermined without being replaced effectively by a new one, resulting in a hiatus of confidence (Wade, 1987). Sixth, upland settlements are more homogeneous in caste, with one caste or tribe usually dominating both in land and number, whereas other villages tend to be multi-caste, which makes social control more difficult.

Finally, collaboration is likely to succeed if all families, including the rich, are highly dependent on forests for their survival needs in terms of fodder and fuel wood. As the productivity of the commons declines, the rich shift to privately grown fodder on their own land, while the poor still use the commons for their sheep and goats. The rich then lose interest in the upkeep of the commons, while the poor lack the power and organization to manage the commons themselves.

The personal interests of the village elite in the management of the commons appear to be a crucial element. Even a market-dominated village may develop collective action if it is in the interest of all, including the powerful people of the village. A study of fodder farms on common lands in Gujarat found that some village leaders took a great deal of personal interest in setting up and running such farms. They seemed to work for non-economic rewards, such as power, reputation and social status. Once established, the successful farms were run on business lines, with the interaction between a farmer and the fodder farm similar to that between a buyer and a private seller. An average farmer did not show any interest in running the farm. In fact, its success was due more to the initiative of the leader than to community spirit. This makes such enterprises precariously dependent upon the quality and integrity of leaders willing to work in the group's interest.

We conclude, then, that community control and management can work in three circumstances. First, in villages that are small, homogeneous, remote from markets, and dependent upon produce from commons. Second, where gains from organization are high for both the village elite and the commoners. Third, where a leader is willing to run the show for non-monetary gains. Analysing the success of sugar co-operatives in Maharashtra, Attwood (1988) reached similar conclusions: co-operatives succeed not because there are no classes in the village society, but because an alliance between the rich and poor farmers for the successful running of the cooperative sugar factories is in the economic interest of both classes.

2.11.1 Gender issues

Within the broad framework of community involvement in the management of natural resources, gender issues have received widespread attention within IUCN for several reasons. The eco-feminist discourse supports women's involvement because of their apparent 'closeness' to nature. It is felt that this closeness gives them a special stake in environmental protection and conservation. The second school of thought traces the need for women's involvement to their dependence on the resource for survival. It is argued that women, being most dependent upon natural resources for subsistence, are sensitive to ecologically sustainable development needs. Further, as they are most severely affected by degradation, for any form of regeneration to be successful, women need to be actively involved in different stages of planning and implementation of the programme. This stance is further strengthened when we highlight the fact that women constitute approximately 50% of the total strength of any community and that no 'real' community participation is possible without their active involvement.

However, policy provisions by themselves are not adequate in ensuring women's participation in community institutions. Gender planning within a government programme is generally confined to formal provisions for women's participation in community management institutions without any serious thought to operationalising and monitoring their actual involvement. Tools and techniques (such as participatory rural appraisal) used for community level dialogue result in information distortion due to the screening out of wider social relations and gender disparities.

The stress on formal provisions for women's representation in committees stems from the mistaken idea that all sections of the community would have equal opportunities to participate without the mediation of an external agency. Observations from the field not only dispel this presumption but also show how unequal opportunities for communication can scale up the existing gender inequalities within the community. Hence, ensuring 'dialogue' during the decision-making process could be the essential first step towards ensuring equal participation of women in community management of natural resources.

Given the sex-segregated and hierarchical nature of most developing societies, separate women's organizations and staff are needed to work among women and instil confidence in them so that they can fight for their rights. Moreover, government staff should have adequate and equal representation of women. They should be sensitised on gender issues through orientation programmes. As women in many societies feel inhibited in expressing themselves in mixed gatherings, each committee should have a separate women's cell for raising their consciousness and for improving their skills. The quality of women's participation and the control they exercise over decision-making processes is more important than the sheer number of women present in such bodies.

These issues are being addressed within the IUCN in the Gender and Environment programme of IUCN, which has developed a series of guidelines for the Dutch Ministry of International Cooperation that address poverty and gender issues in key environmental areas, i.e. forestry, energy, wetlands, agrobiodiversity, urban environment, desertification and climate change. The guidelines are based on the following principles: (1) environmental work provides significant opportunities to promote equity and (2) social equity is an essential requirement for conservation and sustainable development. The guidelines identify poverty-environment-gender linkages and indicators for each key environmental area, and present steps for including gender considerations into environmental activities, including stakeholder dialogue and sectoral reforms.

Both the short and long term goals of supporting women's participation in NRM must be defined clearly. Is the goal limited to integrating women in on-going or new programmes simply because traditional gender roles assign subsistence tasks of biomass gathering to women? Or is the goal to empower women to gain greater control over their labour, knowledge and local natural resources, eventually leading to changes in gender relations resulting in greater gender equity? Unless a commitment to working towards greater gender equity in the longer term is incorporated as a programme goal in IUCN projects, success in increasing women's participation in resource management programmes may end up being short-lived or may even result in increasing rural women's excessive work burden.

2.11.2 Silvicultural changes for forest management

As already observed, IUCN is shifting its priority to forests located outside parks, which constitute the bulk of forests in the developing world. These should include both village forests and government forests. Here, in addition to promoting community management, IUCN should also consider how to change silvicultural practices that will promote people's livelihoods. Some conservative government officials understand community management as a new management regime in which protection is to be ensured by the people and technology is to be controlled by the government. This narrow perspective assumes that the objectives of forest management need not be redefined and could continue, as before, to be timber oriented.

However, issues of technology cannot be divorced from issues of objectives. Silvicultural practices and management options should then be geared to meet these new objectives, and not the other way round. Multiple objectives to maximise outputs from many products will require innovative and experimental silviculture. Although there has been some effort to involve forest communities in management thanks to

IUCN's efforts, little thought has been given to make necessary changes towards the use of technology that will be suitable to achieve the changed objectives.

For instance, in several cases local people prefer the production of grasses to wood. A pastoral tribe in India was persuaded to reduce its stock in order to allow regeneration on the forest patch allotted to the tribe members in the alpine pastures (Saxena, 1997). Although tree density increased due to control on grazing, the output of natural grasses and bush, which the tribe used to feed goats and sheep, went down. The tribe wanted the coupe to be thinned in order to obtain more grasses, but unfortunately the Forest Department was not geared to the silvicultural practice of using a forest compartment to produce the kind of biomass that is useful to the herdsmen. Thus the tribe became alienated from the department and reverted to the old unsustainable practice of uncontrolled grazing. Consequently, at least degraded forests and hills close to a village should be managed to maximise biomass with many shoots that can be pruned occasionally to produce fuel wood, besides providing leaves, fruit and mulch.

From good forests only over-mature, mal-formed, dead or dying trees should be removed, with no particular reservation by species. Ground flora and the under storey should be largely left undisturbed, except to improve hygiene of the forest flora through the removal of noxious weeds. Canopy manipulation, tending and thinning etc. should be adjusted to optimise gatherable produce. The crop would be representative of all age groups because no attempt would be made to achieve a uniform crop in terms of variety or age. In areas where timber species are naturally dominant these would continue to predominate even without silvicultural intervention to achieve a uniform crop. However, because of age and species mix the forests would be able to maintain a continuous supply of miscellaneous small timber and fuel wood for gathering. Commercial working should taper off because clear felling by blocks should be totally abandoned, but there would be some production of timber from the felling of over-mature trees.

From the people's point of view, crown based trees are important for usufruct, but forests still remain largely stem based. Norms for silvicultural practices were developed in times prior to the current scenario of high biotic pressures and must now be adjusted accordingly. If the national objectives have changed to prioritise people's needs, there must be an accompanying change in silvicultural practices and technology.

Timber is a product of the dead tree, whereas NTFPs come from living trees allowing the stem to perform its various environmental functions. Moreover, gathering is more labour intensive than mechanised clear felling. Local people living in the forests possess the necessary knowledge and skills for sustainable harvesting. Lastly, NTFPs generate recurrent and seasonal as opposed to one-time incomes, making its extraction more attractive to the poor. Thus if access to NTFPs can be assured, standing trees can generate more income and employment than the same areas cleared for timber, and also maintain the land's natural biodiversity.

The best organization of management will depend on local conditions; and the balance of advantage for the poor, as between forest department management and community management, will vary. It is by no means automatic that the poor and women will be better off with community management, especially if it entails trees for commercial pulpwood, poles or urban markets. Transferring total management of forestlands to people's organizations may be an ideal goal, but the process will proceed at different paces in different conditions. Care should be taken by IUCN to ensure that the elite do not dominate these committees. In the meantime, what is essential is to develop mixed forests in place of industrial plantations on forestlands to meet the livelihood needs of the poor. Practical considerations suggest that technology is easier to change than institutions.

2.11.3 Developing markets for NTFPs

In this section we examine the question, would national and international markets offer an attractive strategy for both sustaining the natural biodiversity of forests and meeting the economic needs of forest people?

In principle, the idea of green markets is good. Tropical forests are not uninhabited wildernesses. If logging and cutting of green wood for sale is to stop, there must be alternatives to support people's livelihoods. Markets for NTFPs may offer this possibility.

But what guarantees are there that the benefit of high prices in the terminal markets will be passed on to the primary gatherers (marketing and equity issue)? Secondly, will perception of the value of the tree lead to sustainable extraction (production and environment issue)? Let us look at the second issue first.

Sustainable extraction and tenure

As already observed, sustainable production demands extraction only by those with secure and long-term tenure, both de facto and de jure. If tenure is loosely defined, increased value may hasten extraction levels rather than making them more responsible. This argument is equally applicable to concessionaires and industries that have leased forests for a limited period. Often, industries use methods that are destructive to the plants in order to maximise the collection of NTFPs. Thus, land titles and tenure will determine the extent of the sustainability of extraction. The relationship between conservation and commercialisation cannot be understood without referring to the third variable of tenure.

Markets and tenure

The problem becomes complex because tenure itself is a dynamic variable, i.e. increasing value may change de facto ownership from forest dwellers to government or their nominees. In India, as long as the value of a particular NTFP was low it could be used and freely marketed by the forest dwellers, but as the market price of the NTFP in industry increased, the product was nationalised. This increases the problem of externalities (those who benefit from sales do not bear the full cost of production, and vice-versa) and distorts markets in several ways.

Impact of growing markets on communal tenure

Even when governments are benevolent and act in favour of maintaining the hold of local people and user groups over the resource, high market value changes the way the resource is used. The activity now calls for greater entrepreneurial inputs. As risk increases due to the fluctuation of market prices, the necessity to take quick decisions becomes paramount. Communal land tenure, however desirable it may be from an equity point of view, is not the best form of ownership to deal with valuable commodities that are subject to market vicissitudes. Examples of successful cases in joint forest management (JFM) from India show that communal tenure works best where rules are simple and unchanging over a long period of time, and labour requirements from individual members is not very high. Protecting a watershed or a degraded patch requires compliance with a simple rule: do not send your cattle (and wife!) to the regenerating area. The overall requirement of management by the villagers is passive; they merely restrain themselves from illicit and non-sustainable removals for a certain period. These pre-conditions may not be met as new markets are discovered for forest products.

Agrarian structure and commercialisation

Markets in general perform two functions, allocative and exploitative. To the extent markets facilitate commodity production and integrate production and consumption regions, they help the producers choose the most profitable use of factors of production. They allocate their resources in commodity production on the basis of signals they receive from markets. But markets may also play a retrogressive role by coercing producers to sell at a low price through monopsony, credit and withholding of information. In such a case commercialisation may take place either without an increase in production, or without an increase in consumption of the producers. Thus markets could behave in two different ways; these could be exploitative through monopoly, interlocked contracts, fraud and chicanery, and at some other place markets may be competitive, sensitive to the laws of supply and demand, and giving undistorted stimuli to farmers and consumers.

Expanded markets help the locals only when their organizations are strong, working towards improving their bargaining position. It is their weak economy and poverty that makes them totally dependent on loggers, middlemen, moneylenders and large landowners. These actors are too strong to be eliminated from the scene in one stroke. The strategy adopted by IUCN to empower the poor, although it is

a slow process, should be further strengthened, as countervailing forces are needed on the side of the poor before taking on battles against those who are both politically and materially well entrenched.

Finally, much of the profits in the trade of NTFPs will go to those who value addition through processing, storage, transport, etc. and primary gatherers will have to assume these functions if they wish to obtain a higher share of the profits. IUCN may consider weaving this aspect into its projects.

2.12 Costs and benefits of natural resource management

Since IUCN works on a variety of natural resources, from forests to wetlands to protected areas, it may be useful to build a hypothesis as to which type of resources are more easily amenable to community management and what costs are involved in sustaining such management.

The environmental resources used by poor people can be classified along two dimensions: the cost of the technical components needed to manage the resource, and the costs associated with organizing different stakeholders for improved management and distribution of benefit costs (sometimes called 'transaction costs'). The former refers to the investment in the technical components of the resource, the latter to investment in the institutions to manage the resources. When an intervention to improve the technology and infrastructure needed to manage a resource would be costly, such resource regimes are classified as having 'high technical costs' in Table 2.1. Resources that, for various technical or social reasons, people have difficulty organizing around, i.e. those for which it is difficult to create and sustain management institutions, are labelled as having 'high institutional costs.'

The resource regimes mentioned above are only examples; the list could be much expanded. It may be noted that we have put protected area management in the category of high institutional costs, as all conservation does not lead to poverty reduction, as admitted in several IUCN documents.

In general, technical costs are influenced by the usual factors such as scale or number of units, unit cost of inputs and availability of suitable technology. Unfortunately, less attention has been given to comparative studies (IUCN may do so now) of the institutional costs of environmental management. In general, institutional or organizational costs tend to be high for managing resources that are:

- mobile[3] or spread across large areas
- slow growing or fragile
- difficult to patrol or monitor
- difficult to observe or measure
- technically complex
- highly skewed in their distribution among stakeholders.

Conversely, the institutional or organizational cost of collective action tends to be lower when:

- the resource is indivisible
- the resource-to-user ratio is high
- a common cause creates cohesion (e.g. watershed protection, acquiring water, flood protection embankments)

[3] *Such resources include, for example, water, wild game and fish.*

- benefits outweigh transaction costs
- the group is relatively homogeneous and isolated from disruptive external pressures (markets, corruption etc.)
- access rights to the resource are secure.

Under certain conditions, poor people can meet high institutional costs as well as relatively high technical costs. However, the fundamental character of the resource in question does affect relative costs on both technical and institutional dimensions. These considerations should inform policy makers in both the allocation of resources and the design of programmes intended to benefit poor people.

Table 2.1 Technical and institutional costs in resource management by and for poor people

	High institutional costs	**Low institutional costs**
Relatively high technical costs	• Large-scale irrigation • Semi-arid land reforestation or reclamation • Mangrove reforestation • Integrated river basin management • Many transboundary resources (e.g. international rivers, air quality) • Water pollution reduction programmes • Rural road maintenance • Ocean fisheries management	• Small-scale hill irrigation • Food crop systems on difficult soils • Localized water harvesting structures • Centralized provision of energy services • Solar energy for individual households • Pipe sewer systems • Improved public transport
Relatively low technical costs	• Aquifer management • Protection of critical areas • Coastal fisheries management • Coral reef management • Pasture management • Land reform programmes • Integrated pest management • Wildlife and parks management	• Treadle pump irrigation • Humid tropics reforestation • Small water harvesting systems • JFM regimes • Improved cook stoves and cooking energy for poor families • Sloping agricultural land technology (SALT) • Small-scale quarrying • Household-based sanitation systems

On the technical side, too, precise levels of capital needs cannot be generalized. In the case of groundwater irrigation, for example, local costs vary greatly according to the cost to the farmer of energy, drilling and pumping equipment, the depth of the aquifer, crop water requirements, and the seasonal availability of surface water or precipitation. Donors can take action here also to lower costs and expand opportunities for the participation of the poor.

Therefore mobilizing investment resources alone is not enough to guarantee management success. Programmes that fail to address the institutional issues of resource management necessarily fail or under-perform, and this is true of resources managed by the state, by the private sector, or by people's groups, whether rich or poor. This issue is particularly salient in the case of resources that require collective management being promoted by IUCN, which constitute most of the resources mentioned in Table 2.1. The fact that organizing costs tend to be consistently underestimated suggests that part of improving the management of the environment for and by poor people lies in reorienting state policy-making bodies and line agencies toward new structures of governance for the resource.

To improve the life options of poor people, IUCN can choose to target for investment those resources that are valuable to or that affect poor people. But Table 2.1 suggests that IUCN may also wish to pay special attention to resources in areas where investment and organizing costs are lower, and then gradually move toward more difficult technical and managerial challenges as experience is gained in developing partnerships with local people. One hypothesis is that attempts to improve the management of resources that have low organizational costs, no matter what the level of capital investment required, will have a higher success rate than trying to improve those resources for which organizational costs are high. This should not discourage IUCN, donors and governments from attempting to improve management regimes that have high organizational costs, especially when they are critical to reducing poverty. But governments should be aware from the beginning that technical solutions alone will be insufficient and that the requisite political will to overcome the organizational challenges must be commensurately strong.

Lastly, as argued in the draft IUCN book, *Poverty and Conservation: People, Livelihoods and Power*, it is particularly important to continually assess the impacts of actions against expressed goals. What is really happening to the poor? What is really happening to the environment? What have the impacts been? And who better to tell us what has happened to the rural poor than the people themselves? All this suggests that participatory assessment and participatory evaluation are important components of pro-poor environmental management.

2.13 Promotion versus consolidation

Due to IUCN's efforts, exciting beginnings have been made in a number of countries that link environmental regeneration to poverty reduction. Local committees are proliferating, some spontaneously and others with the encouragement and assistance of IUCN field staff and NGOs. Old attitudes are changing. NGOs and government departments, once distrustful of one another, are now working cooperatively in a number of poor countries. Villagers who had earlier only used natural resources are now participating legally in their protection and management in partnership with their old adversaries in the government departments. The potential returns from such efforts are immense because natural regeneration is a low-cost option when compared to that of longer gestation plantations. Collecting NTFPs generates a lot of self-employment and potentially reduces conflicts between forest departments and rural communities. However, much is still to be learned before it is known that the emerging patterns are more generally applicable.

A development concept faces very different constraints and opportunities when it is new, unproven, and unaccepted, compared to when it is long established and widely accepted, and the role of those in charge of its promotion must vary accordingly. For example, much of the effort of IUCN staff to date has concentrated on proving to governments and donors that conserving the environment is necessary to reduce poverty. Such promotion may be valuable in the early phases of a programme, but there are potential problems in repeating the same argument and sustaining it for too long. The nature of promotion results in too much emphasis on positive aspects of the programme and too little critical analysis. At the outset it is important to be able to persuade key actors of the merits of jointly addressing environment and poverty issues, but it eventually becomes important to temper this with critical appraisal, limitations, long-term strategies, and the building of capacity to implement such policies.

It is also good to remember that the success of peoples' participation in one area is no guarantee for its replication elsewhere. Even within a country, community endeavour may be a great success in one part of

the country but not do well elsewhere. For instance, in Nepal community forestry does well in the hills but not in the fertile plains. The conditions prevailing in the hills such as the predominance of subsistence economies, traditional and well-established rights of communities over forests, and economic and physical inaccessibility do not exist in the plains.

One problem with over-promotion of participatory management is that it can lead to massive donor interest and funding support, which may exceed the capacity of IUCN and civil society to absorb. Apart from the lack of institutional capacity, the technical skills to suit different kinds of resources are also insufficient.

Participatory management is process oriented and does not lend itself to becoming a target and product oriented programme. Along with rapid acceptance of the idea of the environment-poverty bind, the capacity of institutions to support it as well as technologies should also be critically evaluated and improved. As argued above, different resources have different requirements, and all are not easily amenable to community management. In the years to come, this aspect of differentiating one resource from another may be a critical variable for IUCN to decide its operational strategy.

Part 3: Case Study - Asia Region

By Paul Steele

3.1 Summary

Poverty is still widespread in Asia, ranging from South Asia where close to a third of the population is living in extreme poverty on less than US$ 1 a day to South East Asia and China where about 15% of the population lives in extreme poverty. Despite significant falls in poverty over the last decade in China and more recently in India, Asia still accounts for almost two thirds of the world's poor people. Natural resources such as fisheries, grasslands and forests are vital to the health, livelihoods and security of these poor people. Women are especially dependent on natural resources and negatively impacted by the lack of access to improved water supply and sanitation and dependence on smoke-producing traditional fuels. It is vital for IUCN to understand and engage with these poverty-environment issues.

While the recent decade has seen a major improvement with three quarters of rural populations in the low-income countries of Asia now having access to improved water sources, access to improved sanitation remains much lower in most countries. Many women and children are affected by indoor air pollution that causes up to a million premature deaths each year across Asia. Even before the recent tsunami, South Asia was the region most prone to natural disasters, and Asia will be further affected by increasing climate change.

Finally, growth to help reduce poverty in Asia is linked to natural resources in terms of exports and revenues from agriculture, fisheries, tourism and minerals. Asia is responsible for three quarters of the world's fish production, Indonesia and Cambodia remain large timber exporters, and many countries have significant mineral deposits the extraction of which raises major environmental issues.

Reducing poverty requires addressing some of the political and economic processes that limit the opportunities of poor people, such as gender inequity, marginalization of certain ethnic and minority groups, and limited access to education, healthcare, infrastructure, credit and markets. Addressing environmental issues that matter to the poor is a similarly political exercise and requires addressing the power relations that limit the access of the poor to natural resources.

Poverty-environment issues play a vital role in the six most populous lower income countries of Asia: China, India, Indonesia, Pakistan, Bangladesh and Viet Nam. Many poor people are dependent on natural resources for their livelihoods and negatively impacted by reduced access to resources and declining resource quality. Examples include the concentration of poor, often ethnic minority people, in areas of high biodiversity such as the forests of Viet Nam and Indonesia and so-called tribals in the forests of India. Poor fishers are found throughout Asia including south India, Bangladesh and Viet Nam. The links between poverty and environment are being given increasing recognition by the governments of these countries, but there is still a long way to go to reverse the declining resource access and quality faced by the poor.

There are a number of important related processes underway for IUCN to engage with in terms of the poverty-environment debate. Key processes include the challenge of agricultural and rural development, the spread of trade and the growth of the private sector, increasing decentralisation and devolution, and greater donor harmonisation around poverty reduction. To engage in these processes and promote pro-poor environmental change, IUCN needs to join coalitions and form alliances with a range of actors including the poor themselves, civil society and the media, politicians, government agencies, regional groupings, research networks, donors and international agencies. Only by innovative coalitions with these diverse partners can IUCN promote pro-poor environmental change.

3.2 Objectives of this review

This review will identify (1) the leading areas of poverty-environment research and practice in the Asian region, (2) who the key players are and how to engage them with IUCN. The focus will be on low-income countries in the region, or countries with large numbers of poor people (e.g. China, Indonesia).

3.3 Introduction to the Asia region

The region is often divided into two parts to reflect different economic, cultural and political contexts:

- **South Asia,** including Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka, is home to 40% of the world's poor, most of whom live in rural areas. Despite considerable progress, the South Asia region faces major constraints for poverty reduction and sustainable development, including inequitable economic growth, persistently low levels of human development, low status for women and feudal, social and political structures. The regions environmental problems include loss of natural resources, lack of water access, indoor and outdoor air pollution and vulnerability to natural disasters (World Bank, 2000).

- **East Asia** is dominated in population terms by China but also includes Cambodia, Indonesia, Lao PDR, Myanmar, Philippines, Thailand and Viet Nam and is home to about 1.8 billion people. The region is characterized by high population density and rapid economic growth and urbanisation. This has led to a major erosion of natural resources. The Philippines has lost 90% of its forests since the 1960s.

3.4 Poverty and growth in low-income countries in Asia

Poverty is now recognised as a multi-dimensional process encompassing lack of income, gender inequity, low educational and health status and powerlessness. To reduce poverty in the widest sense, the world's heads of state agreed in 2000 to the MDGs that include targets for halving poverty, increasing primary school enrolment, promoting gender equity, reducing child mortality, improving maternal health, combating major diseases, environmental sustainability and international partnerships for development.

As shown in Table 3.1, there is considerable variation across Asia in terms of poverty, growth and achievement of the MDG targets.

- In **South Asia**, close to a third of the population remains below the internationally agreed poverty line of less than US$ 1 a day. The exception is Pakistan where poverty fell to 13% in 1998 and Sri Lanka where poverty was just under 7% in 1995. This result is also reflected in the South Asian mortality figures where under-five mortality ranges from 82 to 110 deaths per 1,000 live births, with Sri Lanka having a much lower mortality rate at just 19. The same pattern can be observed for female literacy which remains very low at just a third in most South Asian countries, except in Sri Lanka where it is 90% and India 47%. In terms of growth, most South Asian countries have been growing at about 5% per annum between 1990 and 2001, with India above average at 5.1% and Pakistan below average at 3.7%. Data on primary school enrolment is limited, but shows a wide variation.

- In **East Asia** there is even more variation, but generally Lao PDR, Cambodia and Myanmar have more poverty, higher under-five mortality and lower female literacy. Compared to South Asia, Cambodia and Lao PDR have higher levels of under-five mortality but slightly

better levels of female literacy, demonstrating the cultural impediments to gender equity in South Asia. China, Viet Nam and Indonesia have less poverty than in South Asia, which has helped lower under-five mortality and improve female literacy. The data on primary school enrolment is patchy, but there is considerable variation and even for countries with relatively low poverty levels such as Thailand, primary school enrolment is only 77%.

In general, while poverty is declining throughout the region, the remaining poor are often in particular geographical areas (such as China's western regions and Indonesia's outer islands) and concentrated in particular groups – women, ethnic minorities and certain caste groups. In India, 8% of the population consists of tribals and 17% of scheduled castes. While about 35% of the Indian population is living below the poverty line, half of the tribals and scheduled castes are living below the poverty line. In China, ethnic groups make up 8% of the population but 40% of the poor (Justino and Litchfield, 2003).

Table 3.1 Low income countries in Asia: poverty, growth and progress against the MDG targets

Countries	*Population (2002) millions*	*Annual growth rate (1990-2001)*	*Percentage of population on less than US$ 1 a day*	*Primary school enrolment (1998-1999)*	*Mortality under age five (per 1,000 live births)*	*Adult literacy rate % (women) (2002)*
South Asia						
Bangladesh	143	4.9	36 (2000)	-	82	31
Bhutan	2	-	-	16	100	-
India	1041	5.9	34.7 (1999-2000)	-	96	47
Nepal	24	4.9	37.7 (1995)	-	100	26
Pakistan	148	3.7	13.4 (1998)	-	110	30
Sri Lanka	19	5.1	6.6 (1995)	100	19	90
East Asia						
Cambodia	14	4.8	-	100	135	59
China	1294	10	16.6 (2001)	91	40	80
Indonesia	217	3.8	7.5 (2002)	-	48	83
Lao PDR	5	6.4	26.3 (1997)	76	105	56
Myanmar	49	-	-	-	110	81
Philippines	79	3.3	14.6 (1998)	-	40	95
Thailand	64	3.8	2 (1998)	77	29	94
Viet Nam	80	7.6	17.7 (1998)	97	39	91

Sources: WRI, 2003 and World Bank, 2003b

3.5 MDGs and poverty-environment indicators in Asia

This section will review the MDG7 and present data on progress against its targets in Asia. The MDG7 concerns environmental sustainability and is divided into three targets:

- integrate the principles of sustainable development into country policies and programmes and reverse the loss of natural resources
- halve by 2015 the proportion of people without sustainable access to safe drinking water
- achieve by 2020 a significant improvement in the lives of at least 100 million slum dwellers.

To measure these three targets, seven indicators are identified:

- proportion of land area covered by forests
- land area protected to maintain biological diversity
- energy use per unit of GDP
- per capita carbon dioxide emissions and consumption of ozone depleting substances
- proportion of population using solid fuels
- proportion of population with sustainable access to improved water sources and sanitation
- proportion of houses with access to secure tenure.

In addition to these targets, The World Summit on Sustainable Development (WSSD) adopted five further targets (Bojo and Reddy, 2003):

- maintain or restore depleted fish stocks to levels that can produce the maximum sustainable yield by 2015
- reverse the loss of biodiversity by 2010
- establish a representative network of marine protected areas by 2012
- increase the share of renewable energy in the total energy supply, and provide 35% of African households with modern energy within 20 years
- Phase out, by 2020, production and use of chemicals that harm health and the environment.

Detailed indicators for these additional targets or "MDG plus" are still under discussion.

3.5.1 Environmental indicators, MDG7 and Asia

The sections below report the latest available data on progress against these targets for Asia as summarised in the *World Resources Report* (WRI, 2003), also available from www.developmentgoals.org/Goal7.xls.

Forest cover

FAO data (reported in WRI, 2003) show that from 1990 to 2000, the area of plantations grew in Asia by a significant 5.3% per year, but the area of natural forest declined by 0.1% per year over the same period. This relatively low pace of decline is largely due to China's success in increasing the area of its natural forests over the period. By 2000, the area of natural forests in Asia was estimated to be 375 million hectares or 10% of the world's total natural forests. This masks considerable country variation. While over 50% of Bhutan, Cambodia, Indonesia and Lao PDR is still covered by natural forests, forest cover is about one quarter of the land area in Nepal, Sri Lanka and Viet Nam and about 15-20% in the Philippines and Thailand. The lowest levels of natural forest cover are in India (10.6%), Bangladesh (5.4%) and the extremely low level of Pakistan (1.8%). Deforestation rates are highest in Pakistan (4.1%) and India (3.8%) and 2% or over in Thailand, Sri Lanka, the Philippines and Nepal. Indonesia and Myanmar were losing forests at a rate of over 1% per year, and other countries about 0.5% per year. The two positive exceptions were Bhutan which suffered no net change and, even more impressively, China which from 1990 to 2000 increased its natural forest cover (i.e. not including plantations) at over 0.6% per year.

Data on forest cover can often be deceptive as it provides little information on the quality of the forest. For example, in most countries the area of closed canopy forests is lower than the area of poor and regenerating forests.

A number of Asian countries have banned logging in natural forests. This includes Thailand, which banned it in 1989, Sri Lanka, Pakistan in 1993 (although it was subsequently lifted and then re-imposed), parts of India (e.g. Karnataka in 1990) and now the Philippines in 2004. However, illegal felling continues in many countries and the conversion of forests to agricultural lands remains the main cause of forest loss. Legal (and illegal) logging of timber from natural forests continues on a large scale in Indonesia and Cambodia.

Land area protected to maintain biological diversity

By 2003 Asia had protected 7.6% of its land area (according to IUCN categories), which represented an impressive two thirds of the world total. The countries with large percentages of their land area protected include Bhutan (25%), Indonesia (20%), Cambodia (18%), Thailand and Sri Lanka (13%), Lao PDR (12%) and Nepal (8.9%). However this does not indicate the extent to which these areas are actually protected, or whether they are just "paper parks". Countries with lower shares of their land area protected include Philippines (5.7%), Pakistan (4.9%), Viet Nam (3.7%), India (2.3%), Bangladesh (0.8%) and Myanmar (0.3%).

Per capita carbon dioxide emissions

Relative to the industrialized countries' per capita emissions of 10.8 metric tons (in 1999), emissions from low-income countries in Asia remain small. Even the more industrialized countries of Thailand and China produce only 2.5 metric tons per capita. Indonesia comes next with 1.2 metric tons of emissions per capita both due to energy use and changes in land use. Other countries produce less than one metric ton per capita per year.

Use of solid or traditional fuels

Dependence on traditional fuels is linked to income poverty, gender equity and school enrolment in terms of the time it takes to collect these fuels, health problems from indoor air pollution and in some cases impacts on forest cover, although this is often minimal. Data on the proportion of the population using traditional fuels is complicated since households can use a mix of fuels and more data is available on the use of traditional fuels as a share of total energy consumption. However, these figures provide a significant under-estimate of traditional fuel use as a proportion of household energy since the latter represents only a small part of total energy demand. Traditional fuels include dung, crop residues and fuel wood (often branches rather than trees per se). These traditional fuels constitute a large share of total energy consumption in Nepal (86%), Myanmar (74%), Viet Nam (63%) and Sri Lanka (54%). Traditional fuels provide about 40% of the energy consumption in the three South Asian countries of India, Pakistan and Bangladesh, while they still provide one third to one fifth of the energy in Indonesia (34%), Philippines (23%) and Thailand (20%).

Proportion of households with sustainable access to improved water sources and sanitation (rural population)

Here the focus is on access by the rural population since the majority of the poor live in rural areas where access is typically more of a problem. Sustainable access to improved water sources requires long-term access to safe water. Measuring this requires information on water quality, quantity and access and takes into account factors such as an inside or outside private tap, a public standpipe, a drilled well with pump, a hand-dug well or rain water. UNICEF works to improve access in rural areas and uses a working definition of quantity based on at least 20 litres per person per day; quality parameters and access are calculated as a distance of 200-500 metres. The data in Table 3.2 show that access is 60-90% in South Asia. This is particularly impressive given the dramatic improvement over the last decade. South Asia was the region in the world that experienced the most rapid improvement in access to improved water sources over the last decade with an increase of over 10%. There is much more variation in South East Asia and China. Access is particularly poor in Cambodia (only 29% of the rural population) and Lao PDR (38% of the rural population).

Typically, access to improved sanitation is lower than access to safe water (with Bhutan, Thailand and Sri Lanka being the exceptions). This indicator measures the percentage of the population with excreta disposal facilities including connection to a public sewer, septic tank, pour-flush toilet, simple pit latrine and ventilated pit latrine. Examples of unimproved sanitation include open pit latrines, shared toilets and bucket latrines. The data show that, again, Cambodia is particularly low in terms of access (only 10% access in rural areas), as well as India (15%), Lao PDR (19%), Nepal (22%) and Viet Nam (38%). Between 40-50% of the rural population is served in Bangladesh (41%), Pakistan (43%) and Indonesia (43%). The remaining countries have much higher access levels at 69% for the Philippines, 70% for Bhutan, 93% for Sri Lanka and 96% for Thailand.

Improvement in the lives of slum dwellers and proportion of people with access to secure tenure

UN-Habitat has identified slum dwellers as individuals that lack one or more of the following: access to safe water, access to sanitation, secure tenure, durability of housing or sufficient living area. Secure tenure has been defined by UN-Habitat as the right of all individuals and groups to effective protection by the state against unlawful evictions. People have secure tenure when there is evidence of documentation that can be used as proof of secure tenure status, and there is either de facto or perceived protection from forced evictions (UN-Habitat, 2003). Country level data is still being collected.

Maintain or restore depleted fish stocks (WSSD indicator)

The new additional WSSD target that is most relevant to poverty-environment issues is on fisheries. No data have yet been identified to measure this since data on optimal fish catches are notoriously hard to collect. However, there is data on existing catches and fish protein as a percentage of all animal protein. Asia is the world's leading fish producer with over 63% of the global total and as much as 90% of all aquaculture output (Briones et al., 2004). Fisheries production in Asia is likely to continue to grow slowly in the future, largely as a result of aquaculture, while capture fisheries will experience zero growth or a modest decline in growth. Fisheries are also vital in terms of consumption, particularly for the poor. In Indonesia fish accounts for more than 50% of total animal protein, and over 40% in Bangladesh, Myanmar, the Philippines and Sri Lanka (FAO data quoted in WRI, 2003). Data show that the poor are more dependent on fish as a source of animal protein than the non-poor in India, Viet Nam and the Philippines (Briones et al., 2004).

Land degradation (missing indicator)

One key area that is not covered by the MDG7 or WSSD targets is land degradation, which includes soil erosion, salinization, waterlogging and desertification. This degradation is often identified as Asia's most serious natural resource problem (ADB, 2002). Soil erosion is severe in many parts of South East Asia, South Asia and China. Salinization and waterlogging, which make soil unproductive, affect an estimated 130 million hectares of Asian cropland primarily in China, India and Pakistan. In the drier parts of South Asia, 63 million hectares of rain fed land and 16 million hectares of irrigated land have been lost to desertification (ADB, 2002).

Table 3.2 Low-income countries in Asia: progress against the MDG7 environment targets

Countries	*Proportion of land covered by forests (2000)*	*% of land area protected (2003)*	*CO^2 emissions per capita (metric tons) (1999)*	*Traditional fuels as share of total (1999)*	*Access to sanitation (% of population in rural areas) (2000)*	*Access to improved water supply (% of rural population) (2002)*
South Asia						
Bangladesh	5.4	0.8	0.2	41.6	41	72
Bhutan	63.7	25.1	-	-	70	60
India	10.6	2.3	0.9	41.2	15	82
Nepal	26.3	8.9	0.1	86	22	82
Pakistan	1.8	4.9	0.7	39	43	87
Sri Lanka	25.1	13.5	0.5	54	93	72
East Asia						
Cambodia	52.4	18.5	-	-	10	29
China	12.7	7.8	2.5	19	69	75
Indonesia	52.5	20.6	1.2	34	46	69
Lao PDR	54	12.5	-	-	19	38
Myanmar	51	0.3	0.2	73.7	57	74
Philippines	16.9	5.7	0.9	22.9	69	77
Thailand	19.3	13.9	2.5	19.6	96	80
Viet Nam	24.9	3.7	0.5	63	38	67

Sources: *Forest data (FAO), % of land protected (UNEP-WCM), CO^2 emissions and traditional fuels (IEA), access to sanitation and access to improved water source (UNICEF).*

3.6 Key poverty-environment linkages in Asia

This section highlights key linkages between poverty and environment in Asia including:

- health
- livelihoods
- vulnerability
- gender
- growth.

3.6.1 Health of poor people and the environment

Access to improved water and sanitation and clean fuels are vital to the health of poor people, especially women and children. Increased use of improved water and sanitation has many benefits including a significant reduction in disease, especially diarrhoea, and savings in medical costs and time due to facilities being located closer to home. It has been estimated that diarrhoea morbidity can be reduced by about 21% through the provision of improved sources of drinking water, 36% through improved sanitation, and 35% through adequate sanitation practices (ADB et al., 2004). In some cultural settings where basic sanitation is lacking, women and girls have to rise before dawn, making their way in the darkness to fields, railroad tracks and roadsides to defecate in the open fearing rape or other violence. In such circumstances women often go the whole day without relieving themselves until they have some privacy from darkness. Sometimes they

will limit their daily intake of food and water so they can make it until evening. Without toilets at schools, girls' attendance declines significantly (WHO and UNICEF, 2004).

Chemical contaminants in drinking water are also an issue in several countries of the region, such as Bangladesh, where there are problems of arsenic and fluoride. There is a need to strengthen collaboration between health and environment authorities to protect sources of drinking water from man-made pollutants discharged from industries, human settlements, agriculture and other sources.

Indoor air pollution kills an estimated one million women and children prematurely in Asia. The most intense pollution occurs during short peaks when fuel is added or removed, the stove is lit, the cooking pot is placed or removed, or food is stirred. Those doing the cooking are consistently closer to the fire during these periods. Infants are especially vulnerable as they are generally cared for by the mother and they have immature respiratory systems (DFID, 2003a). Thus, the transition from traditional fuels to modern fuels such as kerosene and liquid petroleum gas would have a significant impact on infant and child mortality.

There are also more indirect linkages between poverty, health and biodiversity in terms of three broad areas (ADB et al, 2004). These linkages are (1) immediate or direct (i.e. impact on nutrition, natural resources and traditional medicines); (2) medium-term or indirect (i.e. changes in vector-borne diseases and ecological services that matter to the poor); and (3) long-term (i.e. links to genetic resources for food security and pharmaceuticals). In terms of the direct links, some natural resources such as fisheries are a key protein source or act as "famine foods" during times of food shortage and economic decline. Food products helped cushion poor communities during the East Asian financial crisis in the late 1990s (Pagiola, 2001). Many traditional medicines collected and often sold by the poor come from the wild, but are threatened or endangered. In terms of medium-term impacts, ecosystem changes such as new water systems can lead to the spread of vector-borne diseases such as malaria. One compelling example of the link between ecosystem change and health was the way deforestation in Indonesia in the late 1990s led to an outbreak in Malaysia of the Nipah virus from bats, which resulted in the massive destruction of a million pigs to prevent further transfer of the virus to humans. Finally, in terms of long-term links, all cultivated crops and livestock and many commercial medicines are derived from wild plants and animals. Loss of the wild gene pool reduces the basis for future crop breeding and medical developments.

Some occupations are particularly prone to environmental health problems. In Asia these include agriculture where excessive pesticides are used, small-scale mining where there is exposure to mercury and other pollutants, and ship breaking that exposes workers to toxics and other dangers. Pesticide poisoning is a widespread but often under-reported phenomenon. A recent FAO study (FAO, 2000) on over 200 pesticides used by Cambodian farmers found that 88% of the farmers had experienced symptoms of poisoning during or after spraying (dizziness, headaches, chest pains, red eyes). This included 35% who reported vomiting (a sign of moderate poisoning) during spraying and 5% who had become unconsciousness (a sign of serious poisoning).

3.6.2 The poor's livelihoods and the environment

A growing body of evidence from Asia demonstrates the importance of natural resources to the poor. However, these resources are under threat throughout Asia. This is illustrated in the case of fisheries resources, which are vital for the livelihoods of poor fishers and for protein consumption by many poorer households. In Asia, the cumulative weight of fish living in coastal waters is estimated to be 8-12% of what it was 50 years ago. With more fishers using more sophisticated equipment, the fish caught per unit of effort has been declining. In the Gulf of Thailand, catches per hour of the same ship with the same equipment has fallen from 250kg/hour in 1961 to 18kg/hour in 1999. This crisis will most seriously threaten the poorest fishers in the poorest countries (World Bank, 2004b).

The decline of resources and reduced access by the poor is also illustrated by the situation in Pakistan, one of the most environmentally stressed countries in the region. The Pakistan PPA (Pakistan Planning Commission, 2004) states: "Across Pakistan, and especially in rural areas, poor households are heavily dependent on natural capital for their livelihoods. However, analysts were extremely concerned about the declining size and quality of the natural resource base. Forests are declining, livestock numbers are

falling, and household land holdings are becoming smaller. Environmental degradation is disproportionally increasing the vulnerability of poor rural households."

3.6.3 Vulnerability of the poor and environmental disasters

Vulnerability to natural disasters and the role of vegetative protection in reducing damage was already an important issue but was reinforced by the recent Asian tsunami. Much of Asia experiences monsoon floods, glacial melts in the Himalayas or cyclones near the coasts. Indeed, such annual floods are an integral and often productive part of the fishing and farming livelihoods of poor people in countries such as Bangladesh and Cambodia. Historically, in flood-prone regions, residents have adapted their houses, livelihoods and social networks to cope with these natural events.

However, there is growing evidence that natural phenomena are now becoming more extreme, leading to more lives lost and property destroyed. Asia faces 90% of global climate-related disasters (DFID, 2004a). Even before the tsunami, South Asia stands out as the region most affected by natural disasters such as floods. From 1990-1998, South Asia accounted for 60% of disaster-related deaths worldwide, with India and Bangladesh most affected (World Bank, 2000). The 1976 cyclone in Bangladesh was the worst natural disaster of the past century killing an estimated 500,000 people. In 1999, a cyclone hit the coast of Orissa, killing an estimated 10,000 people, but affecting the livelihoods of 12.9 million people and destroying 1.6 million houses, nearly 2 million hectares of crops and 40,000 livestock (DFID, 2004a). The year 2004 has seen another year of major flood-related deaths across South Asia. While the science is complex, it is agreed that global warming will increase these extreme weather events.

In addition to more extreme weather events, climate change may lead to rainfall becoming more variable during the Indian summer monsoon. Rainfall is also likely to increase further, worsening the frequency and severity of floods. There will also be impacts on food security. In India a temperature rise of 2°C could lower yields of staple crops by 10% and reduce farm revenues by 25% (DFID, 2004a). Increasing frequency of El Nino events will cause declines in marine fish productivity, affecting food security in fish-dependent countries such as Cambodia, Viet Nam and Thailand. Health impacts include the spread of malaria to new areas. Water scarcity is likely to worsen across much of Asia.

3.6.4 Gender, poverty and the environment

Poor women are particularly dependent on natural resources and suffer when access to these resources is reduced or their quality declines.

- Women are often required to travel long distances to collect water and fuel wood. A study in 1996-1997 involving over 1,000 women in ten locations across twelve districts in Uttaranchal, India found that 30% of women suffered miscarriages – much higher than the national average – linked partly to the heavy loads of wood and manure carried by women during pregnancy (Dasgupta and Das, 1998).

- Women are more exposed to indoor air pollution from cooking with traditional fuels. Studies in India and Nepal found that non-smoking women who have cooked on biomass stoves for many years exhibit a higher prevalence of chronic lung disease (World Bank, 2002b).

- Women generally are particularly dependent on natural resources for their livelihoods yet face more restrictions on access to these resources. In west Bengal, three times as many women as men were involved in gathering NTFPs. These resources were entirely processed by women and twice as many women as men were involved in marketing NTFPs (Ford Foundation, 1998).

3.6.5 Growth, poverty and the environment: trade-offs and synergies

Generating pro-poor growth is key to the achievement of the MDGs. Often natural resources are the main wealth available in low-income countries and rural areas with high poverty. Already natural resources such as minerals, forests, fisheries, wildlife tourism and groundwater contribute to the economic growth and exports of many Asian countries. In some cases this provides benefits to the poor – but in other cases the politics of natural resource extraction limit pro-poor benefits (DFID, 2004b).

Box 3.1 Potential for mineral resources to reduce poverty

"How can we prevent poverty if we don't have the money? How can we reduce disease, how can we strengthen the democratic process, how can we strengthen tolerance if we don't have money?" So stated Mr Gusmao, East Timor's President, April 2004 complaining about attempts by Australia to exploit disputed offshore oil and gas reserves between the two countries. East Timor argues that the reserves that belong to them would yield an additional US$ 8 billion over the long-term if a more equitable boundary were drawn.

Source: Guardian weekly newspaper, April 22-28 2004, p5.

Pro-poor growth from natural resources requires reconciling competing objectives for natural resources in terms of revenue generation, employment creation, direct subsistence use, and small and medium scale processing. A top-down approach to pro-poor growth focuses on large-scale private sector exploitation, generating revenues for pro-poor growth and diversification, for example large-scale mines, commercial fisheries and large-scale commercial logging. A bottom-up approach focuses on small and medium natural resource based enterprises. Examples would be subsistence fisheries, and small-scale logging and mining operations. Many countries combine the two approaches, for example by combining subsistence fishing with trawler fishing, such as in Pakistan and Thailand, which often leads to conflicts. These choices have to be made in a political context where vested interests often prevent the poor from reaping the benefits. The top-down approach of private sector expansion is undermined when few of the revenues or jobs benefit the poor. The bottom-up approach of substance production suffers from common problems that the poor face in terms of lack of technology, capital and market access.

In addition to the standard problems of pro-poor growth in any sector, natural resources have some special characteristics. They are fixed (in the short term) and remote, and property rights are unclear and government, as the legal owner, has an unusually large role to play. At the macro level this can generate incentives for poor economic and environmental management, leading to boom and bust as excessive extraction is promoted by state subsidies. Examples include Indonesia's forests, Thailand's fisheries, Bangladesh's shrimp farming and India's groundwater. At the micro level, resource dependence can leave poor households trapped in a low-income poverty trap. Timing is crucial to try to shift from pure resource extraction to resource management and diversified income sources before it is too late and the resource collapses. Reforms are required in NRM to promote transparent fiscal arrangements, backward linkages and reduced conflicts between large and small-scale resource users and diversification away from natural resource dependence, both at the household and national level. There is an urgent need to make markets work for low-income producers (see Scherr et al., 2004).

3.7 Addressing poverty-environment issues in Asia: the politics of change

3.7.1 The politics of poverty reduction in Asia

"Poor people have no access to the police station, bank, government offices, and the judge of the village court. The rich people dominate these institutions". (A village in Bangladesh, *Voices of the Poor*, World Bank, 2001.)

Many of the factors explaining who are the poor are social, political and economic processes. While these processes lead to the continuation of poverty in Asia, they may also benefit some groups. Where resources are scarce, interest groups in the capital will ensure that they lobby for urban services so rural investments may lose out. Dominant ethnic groups will tend to favour investments from which they benefit. Some men may resist the loss of power that gender equity entails. Wealthy groups may be reluctant to share power and resources (UNDP, 2002a). Powerful leaders in the public and private sphere may seek to advance their own personal and business interests. This suggests that reducing poverty will require a change in power relations. As Sen and Dreze (1989) conclude: "The demands of different classes typically do not receive equal treatment because of strong links between economic inequality and the distribution of political power."

The centrality of politics is also evident in explaining the rapid fall of poverty in East Asia and parts of South Asia, such as Kerala, India. Leaders and elites deliberately introduced policies to share growth with the poor and promote upward mobility. Political reforms were vital in Malaysia which committed itself to shared growth following race riots in 1969 with the formation of a coalition of three parties, each representing a different ethnic group. The new economic policy had as its explicit objective the eradication of poverty and accelerating the process of restructuring Malaysian society to correct economic imbalances and eliminate racial economic inequality (Salleh et al., 1993). In Kerala, a rigid caste system was challenged by poor people fighting for their rights in the early part of the 20th century, helped by social reformer and spiritual leader Narayana Guru. This was helped by land reforms and politically organized trade union groups, including in the informal sector (Krishnan, 1997).

3.7.2 The politics of pro-poor environmental change in Asia

Political change in environmental management is key to poverty reduction, just as politics are key to broader poverty reduction. Natural resources are potent political and economic commodities, especially in the poorest countries, so control over the use and benefits of ecosystems is often not in the hands of the poor. Changing this power equation and achieving prudent ecosystem management that benefits the poor requires addressing a complex range of governance issues. This is illustrated by an Indonesian case (see Box 3.2).

Box 3.2 Poverty, environment and politics in Indonesia: the poor face declining returns from fishing

The fishing village in west Lombok counts 588 people (167 households). The poorest live in houses made of woven bamboo and only 20% of households have electricity. Almost every household has had a child who died. Only one quarter of the households own (non-motorised) boats. Men fish, while women trade the fish when it lands. Livelihoods are under stress as fish catches have fallen by a third compared to 1990. The reasons include: increasing numbers of fishers, overfishing by outsiders who use trawlers and large nets, and increasing use of explosives in fishing. Through a government programme it was possible for the village to acquire a motorboat and tuna net, but the sub village head took the equipment for himself. Fishers are forced to rent boats and equipment from the rich and pay them half the catch. Incomes are especially low during the rainy season when there is no fishing due to storms. Measles and diarrhoea become endemic and some children die every year. During this period people walk up to 8 km looking for work or to collect edible shellfish for sale. For women, divorce is a major cause of poverty and this is increasing due to economic stress. While richer men marry up to four wives, poor men find it hard to find wives. Thus, nature, wealth and power intersect so that poor fishers face declining returns from fishing due to increasing fishers, pressure from outsiders and the control of resources by the wealthy and politically well connected.

Mukherjee et al., 2002.

Colonialism and the process of declining resource access

Asia has experienced a long history of political changes that negatively impacted on poor people's natural resource based livelihoods. Colonialism often began the process of restricting access to natural resources, and redistributing resources to generate profits for the colonial power. In India, the British played a key role in creating the irrigation system of Punjab, with dramatic social and environmental impacts. In many colonized countries such as Indonesia, Sri Lanka and Bangladesh land was taken from poor people to grow export crops such as coffee, tea and rubber. Many of the current patterns of resource access were shaped by the massive impacts of colonialism.

New factors affecting resource use

In addition to this historical process, there are now many new factors affecting natural resource use, including increased marketing of rural economies, population dynamics and the changing role of the state. These linkages between nature, wealth and power are complex and vary according to ecological zones and social settings. However, there are some more general challenges: declining profitability of natural resource use, negative impacts from external actors, lack of support from the state and the challenge of population growth.

Inequitable distribution of key resources such as land

Some natural resources are so inequitably distributed, e.g. land, that it is a major block on attempts at poverty reduction. This is the case in several Asian countries, such as Pakistan. Even among the poor, some groups lose out more than others from inequitable access to land. This is particularly the case for women and indigenous groups. Agrarian reforms were central to poverty reduction in China, Taiwan, Viet Nam, South Korea and the Indian states of West Bengal and Kerala, and more recently they have been undertaken in the Philippines. In Taiwan the Koumintang leaders were motivated by their failure in Mainland China where they had been too closely allied with the landlords. This was combined with US pressure to undertake reforms to undermine the potential for communism (World Bank, 2003). Stimulated by land reform, owner farmers rose from 58% of the farm population in 1947 to 95% of the farm population in 1964. More recent reforms in the Philippines have had less success. During the 1986 People Power revolt that toppled Ferdinand Marcos, Corazon Aquino had promised to undertake land reform, although she herself was a member of a prominent plantation owning clan. She failed to undertake the reform while she still had

emergency powers at the start of her term. When the new Congress, which was dominated by landowners, finally passed a land reform bill it was full of loopholes. Ultimately, the reforms achieved little (World Bank, 2003). However, land reform will remain a key ingredient in addressing poverty-environment issues.

Wealthy households control inputs needed to gain from the natural resource base such as credit and water for irrigation

To generate wealth from the land, many inputs are required including labour, seeds, fertilizers, pest control, tractors and threshers and in many arid areas, water for irrigation. To finance fertilizer and other inputs, credit is key. However, rural areas, with their dense inter-linked social network, often provide a monopoly position to the dominant wealthier landowners and traders with virtually all-or-nothing choices for the weaker parties. Surveys from west Bengal found that labourers tied to their landlords through credit, were least likely to take part in group bargaining and agitation for rises in rural wages. Lack of credit is a key constraint for poor farmers in allowing them to improve their land through soil and water conservation. Access to irrigation water, like land, is heavily biased in favour of the wealthy farmers. Water coming through surface irrigation passes along channels from the head-enders, whose supply is more assured, to the tail-enders, whose supply is less reliable. Groundwater irrigation is also more likely to be affordable by wealthier farmers, although poor farmers tend to find groundwater easier to access than large surface water schemes (Roy and Shah, 2002).

Government control and inequitable access to natural resources by the poor

In many cases, the government formally controls resources. When these are leased out, the wealthy are more likely to benefit from their use. This is especially true of forests and fisheries. Allocation of fishing rights in Viet Nam and Cambodia has reduced access by the poorest people, including women, ethnic minorities and displaced people.

Elite seize control of common property resources

Common property resources are essential for the poor, but in many cases access to them is declining. Processes that the poor cannot control are frequently undermining their unwritten traditional rights to such resources (Beck and Nesmith, 2001). There are numerous examples of how elite groups are increasingly controlling common property resources. This is aggravated by the breakdown of systems of regulation that controlled common property use in the past due to population pressure and other factors.

Political patronage and corruption

State capture by the elite is worsened by corruption. Natural resource wealth for political patronage includes forests in Indonesia and Cambodia, irrigation access in Pakistan and fisheries rights in Bangladesh. In Cambodia, where illegal logging has flourished since the mid 1990s, payments to government officials in the form of bribes are estimated to amount to US$ 200 million, more than 13 times the US$ 15 million that the Cambodian government took in official taxes on legal forest operations (Smith, 2003). Bob Hassan, the Indonesian timber magnate, was President Suharto's golfing partner and just before Suharto's overthrow had risen to the position of Minister for Trade and Industry.

Blaming the poor for natural resource degradation and anti-poor natural resource regulations and enforcement

There are many examples of the poor being blamed for environmental degradation. The poor are often blamed for deforestation. The Indonesian timber industry and senior Ministers blamed poor farmers for the 1997 forest fires, even though subsequent evidence demonstrated that large forest concessions were the major culprits. The poor have also been blamed for over-stocking with goats, leading to deforestation in India (see Box 3.3). In many cases the poor are blamed for over-grazing or hunting, and when protected areas are created the poor suffer most. This has been well documented in protected areas in Thailand, Nepal,

India and Sri Lanka. Sometimes environmental regulations are introduced in a draconian way that negatively impacts the poor. For example, there is evidence that China's ban on tree felling in the upper watersheds to prevent floods has been applied too widely and has very negative impacts on some poor households. In many other cases, the restrictions on felling trees on private lands, as in Sri Lanka and west Bengal, encourage bribery, act as a tax on the poor and are a disincentive for households to plant trees.

Box 3.3 Ensuring poor households are not penalized – controversy over goats in India

While many blanket environmental restrictions have negatively impacted on the poor, there are some positive examples where this was resisted or later dropped. In India, some argued that goats must be banned and this was the view of the Indian Prime Minister Rajiv Ghandhi in 1987 who referred the matter to a high level task force. However, the report concluded: "sheep and goats do not pose a threat to the ecology as generally believed . . . their negative effect, if any, has been highly exaggerated." One member of the task force was more vocal and strongly opposed the ban: "Only people in Delhi can talk of such things. In the Himalaya, they [goats] are the main beasts of burden." The ban was dropped. Its impact on the poor would have been huge as 35% of the meat consumed by marginal farmers comes from goats, and its milk is drunk by a majority of the rural population (Khanna, 1992).

3.7.3 Conclusion: pro-poor environmental change requires political change

For the reasons given above, environmental change, and in particular access to natural resources, is an inherently political process. Power relationships determine that generally the poor with least economic or political power have least resource access. Changing this balance requires changes in the underlying power relations. For example, political forces can explain the spread of JFM in India. The initial experiments with JFM in Arabari in west Bengal received strong support after the Left Front came to power in that state in 1977. Similarly a World Bank JFM project started in Andhra Pradesh in 1994 caught the attention of the populist Chief Minister who spread the approach throughout the state after 1996 (Lele, 2000).

3.8 Poverty-environment analysis of selected Asian countries

Summary of the poverty-environment context for the six most populous lower income countries in Asia:

- China (1.29 billion)
- India (1.04 billion)
- Indonesia (217 million)
- Pakistan (148 million)
- Bangladesh (143 million)
- Viet Nam (80 million)

Each sub-section concludes with some processes and ways in which IUCN could be involved.

3.8.1 China

Rapid decline in poverty

China, with a population of almost 1.3 billion, has experienced one of the fastest declining poverty rates in history, assisted by the rapid economic growth of over 10% a year. In 2001, 16.6% of the population remained in extreme poverty below US$ 1 a day. This falling poverty has been accompanied by impressive primary school enrolment (91%), relatively low under-five mortality (40 deaths per 1,000 live births) and high female literacy (83%).

Health and environment – water and sanitation

With 75% of its rural population having access to safe drinking water and 69% of its rural population having access to improved sanitation, China is on track at the national level to meet the MDG target for this indicator. However, there are still major health problems associated with unsafe water and lack of hygiene leading to an estimated 106,000 deaths attributable to diarrhoea (WHO and UNICEF, 2004).

Health and indoor and outdoor air pollution

Many people still depend on traditional fuels for cooking, and this imposes a considerable health burden. Outdoor air pollution is also severe and some of the worst air pollution in the world is found in cities such as Chongqing and Shanghai. With its large size and rapid growth, China is the second largest energy consumer after the US, but still has relatively low per capita consumption.

Forests, protected areas and livelihoods

China is rapidly waking up to the challenges of environmental degradation. It has launched a major drive to increase forest cover, and has been successful in increasing the area of natural forests over the last decade although natural forests are still limited to 12.7% of the land area (FAO data). It has increased the number of protected areas. However, there are concerns that this may be negatively impacting on the livelihoods of some poorer forest-dependent households. In addition, protection of China's resources has led to a major increase in imports from neighbouring countries. China is now the world's second largest importer of wood and the top importer of logs, much of which come from South East Asia (World Bank, 2004a).

Land degradation and livelihoods

This is also a concern in some parts of the country. In order to reduce soil erosion and protect the environment, the government has embarked on a major land conversion policy where cultivated land is converted to forests and grasslands by providing compensation to farmers for a five to eight year period. There are nevertheless concerns that this programme may not be economically sustainable once the initial compensation period is over, that there is limited participation from farmers, that the programme lacks coordination across government and no thorough analysis has been made of inter-regional differences (CAS, 2004).

Poverty and environment synergies

There are clear poverty-environment linkages in the poorer inland rural areas of western China away from the rapidly industrializing coastal areas. These are also the areas of both biodiversity hotspots, such as Yunnan, and areas of severe resource constraints in mountainous regions. The government is seeking to reconcile poverty reduction and environmental protection as parallel policy objectives in these areas through the Great Western Development programme and the New Rural Poverty Reduction and Development Plan (CAS, 2004).

Box 3.4 Forestry rehabilitation in western China

By the end of 2004, local people in China's western regions had rehabilitated and cultivated 118 million mu (7.87 million hectares) of land into forests and had planted about 170 million mu (11.3 million hectares) of trees on barren land and mountains, according to the State Council's Office of the Leading Group for Western Region Development. The country has improved about 190 million mu (12.7 million hectares) of seriously degenerated grassland in the western region since 2003, sources from the office said. The west of the country is home to much of China's water sources and is the largest power provider for the nation. But, it has 80 percent of the nation's desert areas, and 70 percent of the country's most serious water and soil loss has occurred in the region.

China Daily, Sunday, 13 February 2005

Poverty-environment trade-offs through anti-poor policies

In other cases, current policies may create trade-offs between poverty reduction and environmental protection. The state seems to be recognising the high cost that environmentally damaging growth has had in the past and several programmes are underway to address this. But it is vital that these environmental policies are implemented in ways that do not harm the poor, in particular the establishment of nature reserves and the introduction of the logging ban.

Key process and institutions for IUCN engagement

Both the state and a rapidly growing private sector lie at the heart of poverty-environment challenges and opportunities in China. Unlike other Asian countries, civil society is still developing and is not a major force in policy change. The private sector can ensure that new technologies and efficiency gains are used to reduce pollution and use resources more efficiently. The state faces challenges in moving from an engineering-led development approach to one that is more participatory and coordinated. Location specific pro-poor environmental policies that avoid a uniform one-size-fits-all approach are needed.

Given its unique political structure and history, which can limit the freedom of civil society groups, the approach to poverty-environment issues is not straightforward. However, there seems to be interest from a number of key government institutions and development partners to highlight poverty-environment issues. This was the subject of an international workshop on 8-9 January 2004 jointly organized by the National Development and Reform Commission (NDRC) and the Chinese Academy of Sciences (CAS, 2004) with a number of development agencies.

The China Council on International Cooperation on Environment and Development (CCICED) is one forum for international and Chinese policy makers to come together and has existed for the last decade to highlight key environmental issues in China. Recently the Council has started to pay greater attention to poverty related issues. The group undertook some important work highlighting the negative livelihood impacts on the logging ban. A number of international NGOs, such as WWF, are active in the poverty-environmental field.

3.8.2 India

Poverty still affects almost one third of the population

India, with its population of just over one billion, has recently begun to experience declining poverty, although a staggering one third of the population still lives in extreme poverty on less than a US$ 1 a day. Female literacy is 47% and under-five mortality 96 per 1,000 live births.

Health and the environment – low sanitation access

Access to improved water sources is relatively high in rural areas (82%), but access to sanitation remains poor at 15%, the lowest in South Asia. This causes major health problems associated with unsafe water and lack of hygiene, leading to an estimated 450,000 deaths attributable to diarrhoea (WHO and UNICEF, 2004).

Health and exposure to indoor air pollution

An estimated 500,000 women and children die in India each year due to exposure to indoor air pollution, representing 25% of estimated indoor air pollution deaths worldwide. Biomass use has also been associated with blindness (attributed to 18% of cases in India) and immune depression (World Bank, 2002b). Indoor air pollution accounts for 6-9% of the total disease burden (Government of India, 2002)

Agricultural livelihoods and groundwater decline

Groundwater now irrigates 27 million hectares of farmland in India or 60% of the irrigated area. There is some evidence that groundwater benefits the poor more than large-scale surface irrigation. In India, small farmers account for 29% of the agricultural land area but 38% of the net area irrigated by wells and 35% of the tube wells with electric pumps (Roy and Shah, 2002). However, non-poor farmers still find it easier to access groundwater, and as water tables fall and costs rise the poor often cannot afford the additional pumping costs. Nevertheless, in many situations unequal private exploitation of groundwater is better for the poor than no groundwater exploitation. Access to subsidies for groundwater in India is often linked to political connections. State tubewells are generally sited near the land of wealthier farmers. Groundwater use is highest in densely populated areas with highly productive agriculture. In some areas groundwater-led agricultural booms are still underway, but in other areas decline has already set in. As a result of groundwater over-use, agriculture has been declining in northern and western Gujarat, Tamil Nadu and southern Rajastan. In many areas in western India half the wells are now out of commission due to over-pumping. In these areas, where the groundwater boom has now turned to bust, for example on the coast of western Gujarat, the poor have become poorer and depopulation of entire clusters of villages has taken place. As with so many natural resources, policy is lagging behind resource use. The main aim of policy should be to shift from resource development to resource management (Roy and Shah, 2002). The western region of India is hardest hit by groundwater depletion. Encouraged by spiritual Hindu organizations and numerous local NGOs, major efforts are underway to recharge lost groundwater. Some 300,000 open and bore holes have been modified to receive diverted rainwater. Thousands of ponds and check dams have been built and other rainwater harvesting techniques are being used to increase rainwater recharge (Shah et al., 2000).

Common property natural resources are a key source of poor people's livelihoods

It has been estimated that common property resources provide about 12% of household income to poor households in India. In India, common property resources provide up to US$ 5 billion a year to poor households, or double the amount of aid that India receives. In general, the poorer the household the more important is the contribution of common property resources. As a result, common property resources contribute to rural equity (Beck and Nesmith, 2001).

Access to common property resources is declining

In western and southern India, privatisation of land has led to a 25-50% reduction in the extent of common property resource lands (Jodha, 1990). This is often the result of powerful outsiders who control natural resources with the support of political authorities.

Forestry based livelihoods

It is estimated that 100 million people are wholly or partially dependent on forests in India. This includes more than 70 million tribals or adivasi people (Government of India, 2002). NTFPs may account

for as much as 16% of total income of households in India; in Orissa, Madhya Pradeh, Himal Pradesh and Bihar states as much as 17% of the landless depend on NTFPs for their daily work and 39% are involved in NTFP collection as a subsidiary source of income (Mallik, 2000). In Kolar District, Karnataka, 55% of small farmers used the sale of timber for house or well construction and 40% use timber income for marriages and providing education (Scherr et al., 2004). The National Forest Policy of 1998 gives this explicit recognition: "The life of tribals and other poor living within or near forests, revolves around forests. The rights and concessions enjoyed by them should be fully protected. Their domestic requirements for fuel wood, fodder, minor forest produce and construction timber should be the first charge on forest produce. Similar consideration should be given to scheduled castes and other poor living near the forests."

Fishery livelihoods

There are an estimated 1 million active fishers and just under 6 million people engaged in fisheries or related activities (Government of India, 2002). In many cases, fisheries provide a last resort occupation for the poorest. There are concerns about over-fishing and frequent conflicts between subsistence fishers and more commercialised large craft and trawlers.

Box 3.5 Trawler bans in Kerala – the mobilization of marginal fishers to demand pro-poor growth

"Our only hope lies in the sea, for we know that it belongs to the dead, the living and those yet unborn" (Kerala fisherman).

Up until the 1960s fishing in the state of Kerala, India was largely restricted to non motorized craft dominated by certain caste groups. In 1961 there were an estimated 60,000 traditional fishing craft. In the mid-1960s the government, with donor support, started to introduce small trawlers to take advantage of the rising demand for prawns. This led to declining real incomes for artisanal fishermen whose income fell from Rs 850 per year in 1974 to Rs 420 per year in 1982. There was also a fall in the availability of fish for poor consumers for whom fish was the main source of protein. In the 1970s conflicts between trawlers and artisanal fishers, led to the formation of a trade union, the Kerala Independence Fishworkers Federation (KSMTF). In 1981, this Federation demanded a trawler ban during the monsoons when fish spawning takes place, and a trawler-free coastal zone. The tactics used were fasts, road blocking and massive processions before the government secretariat in the capital Trivandrum. Political parties created fishers' organizations and joined in to benefit from this mobilization. Legislation was passed for zoning, and in 1989, after much agitation, the trawler ban was introduced. This ban was later dropped but the artisanal fishermen have moved from being a marginal group to a key political force.

Kurien, 1992

Promoting co-management of forest resources

While the poor's access to resources is declining in many areas, there have been attempts by the government to promote more access to poor households. Perhaps the most widespread of these is the forest sector, through JFM, which began in the 1970s out of tension between the Forest Department and local groups. It began in west Bengal in Arabari with villagers allowed to reap the benefits of forests that they helped manage. During the 1980s, the experiment later spread to Orissa and Andrah Pradesh. The scheme has proved a success in regenerating forests and allowing greater access to the forests by poor households. By 2002, co-management of forests was underway in 27 states, through over 62,000 forest protection committees, and covered 14.2 million hectares or 18% of the total forest area (Government of India, 2002). In Andrah Pradesh alone, 1.2 million people, mostly tribal peoples, were involved. However, many challenges remain, particularly on the marketing side, with NTFPs and timber still marketed through uncompetitive channels that reduce the prices for low-income households (WRI, 2003).

Promoting livelihoods through protected area management

India has, like many countries, faced challenges in terms of reconciling local livelihoods with the preservation of protected areas. The approach adopted is known in India as ecodevelopment, and since the late 1990s many protected areas have had ecodevelopoment committees (EDC), often supported with GEF financing. A confederation of these committees was created in 2002. While these EDCs have a mixed track record, there are some definite successes, such as the Periyar Tiger Reserve in Kerala that made use of its 400,000 tourists a year to generate significant livelihoods and benefits for the neighbouring villagers. A shop has been set up, villagers work as guides and forest watchers. Interestingly, the overall incomes of residents from ecodevelopment are still below what they used to earn from smuggling and illegal activities. Yet, the standard of living is higher since they are not pursued by the police and the influence of middlemen and money lenders has been reduced. The availability of more dignified livelihood opportunities has reduced criminal activities and prostitution (Kothari and Pathak, 2004).

Key process and institutions for IUCN engagement

Key processes are the decentralisation of many NRM functions to the local level panchyats and the rise of participatory NRM including JFM, participatory watershed management and ecodevelopment in the context of protected areas.

India has a vibrant set of grassroots activists and advocacy organizations involved in promoting poverty-environment issues. Many of these activists use the pro-environmental stance of the courts, especially the Supreme Court.

India also has strong university and research centres, as well as internationally recognised centres that combine advocacy and policy research such as the Tata Energy Research Institute (TERI) and the Centre for Science and the Environment (CSE).

3.8.3 Indonesia

Declining poverty levels, interrupted by the financial crisis

Indonesia, with its population of 217 million, experienced rapid growth in the late 1980s, but this slowed and was dramatically reversed during the Asian financial crisis of the late 1990s. By 2002, the situation had again improved somewhat with an estimated 7.5% of the population living in extreme poverty at below US$ 1 a day. Female literacy is 83% and under-five mortality is 48 per 1,000 live births.

Recent upheavals affected natural resources

The political and economic upheavals undergone by Indonesia in the last decade have been partly driven by natural resource issues such as equitable access to the resources, and have had major effects on the resource base. This is vividly demonstrated in the forestry sector, which was managed in a corrupt way from the centre during the Suharto era and has now been increasingly seized by sub-national authorities leaving a policy vacuum and weak enforcement.

Agricultural livelihoods and water resource management

Much of Indonesia's high rice productivity depends on complex NRM systems developed over many generations. This is very clear in Bali where the population has had to adapt to the steep mountain slopes, managing the water resource so that fields are flooded during planting and growing but drained during harvesting. Steep rice terraces have been built into the mountainsides and sophisticated water management structures, known as *tempek*, have been set up. This requires coordinated agricultural practices so that fields at the top are flooded and prepared for planting, while lower crops are already being harvested. This coordination is achieved through the irrigation society or *subak* of landowners, all irrigated by the same source. The whole structure is linked through religious and cultural beliefs (Borrini-Feyerabend et al., 2004b).

Livelihoods and biodiversity

Indonesia, as the world's largest tropical island archipelago stretching across many time zones, is the most biologically diverse country in the world. Though it only covers 1.3% of the earth's surface, it ranks first in the world for mammals (515 species, 36% of which are endemic), third for reptiles (over 666 species), fourth for birds (1,519 species, 28% of which are endemic), fifth for amphibians (270 species) and seventh for flowering plants. It also has the most biologically rich coral reefs in the world, particularly around Sulawesi and Muluku with around 1,650 species and 60% of the world's hard coral species (World Bank, 2004). These natural resources also sustain many livelihoods. Indonesia's reefs provide livelihoods for over 67,500 coastal villages throughout the country. Twelve million people live in and around Indonesia's forests (World Bank, 2004a).

Box 3.6 Co-management in Indonesia – Dayak people in the Kayan Mentarang National Park

The Kayan Menterang National Park in East Kalimantan is, at 1.4 million hectares, the largest protected area in Borneo and one of the largest parks in South East Asia. About 16,000 Dayak people live in or near the park. These are groups who still live according to adapted or traditional law. In 1980 the area was established as a Nature Reserve under strict protection that allowed no human activity. But it later became clear that the Dayaks had rightful claims and should be allowed to continue their traditional activities. From 1996 to 2000, the Dayak were assisted in developing their management of the park and in 2000 the Alliance of the Indigenous People of Kayan Mentarang (FoMMA) Park was formally established. FoMMA now legally represents the Dayak in the parks management board that stresses collaboration and equal partnership among the government and the Dayak.

Borrini-Feyerabend, Kothari and Oviedo, 2004

Excessive capacity in the timber industry drives deforestation

Indonesia has many more wood processing firms than sustainable timber sources, leading to deforestation and illegal logging. Data from the Forestry Information Centre shows that the rate of deforestation increased from 1.6 million to 1.8 million hectares per year between 1985 and 1997, to more than 2.83 million hectares between 1998 and 2000, 80% of which was due to illegal logging. If the trend continued, there would be no forests left by 2010 in Kalimantan and North Sumatra (Jakarta Post, 2005).

Key process and institutions for IUCN engagement

Much of the policy process is still in a state of flux in Indonesia. However, what is clear is that there is growing provincial autonomy, and this is an important area for natural resources. One of the major environmental challenges is the forestry sector, but while the federal Forestry Ministry is now more progressive, much of the forests are being lost in the policy vacuum that exists at sub-national level.

3.8.4 Bangladesh

Widespread poverty

An estimated 36% of Bangladesh's population of 143 million is deemed to be living in extreme poverty below US$ 1 a day. Female literacy is only 31%, and under-five mortality is lower than might be expected given the poverty levels at 82 per 1,000 live births.

Poverty and water and sanitation access

Seventy-two percent of the population has access to improved water supply and 41% in rural areas have access to sanitation – almost three times the access in India.

Poverty, health and environment: the problem of arsenic poisoning

The underground water of more than 40 out of 64 districts of the country is contaminated with arsenic, ranging from low to very high levels. Drinking arsenic-contaminated water can, over a prolonged period, cause arsenicosis. An estimated 20 million people are affected (Ahmed et al., 2005).

Poverty and environmental vulnerability

Bangladesh will be one of the countries most affected by climate change. A predicted one-metre rise in sea levels over the next century will cover nearly 20% of the country and affect approximately 25% of the then much larger population (DFID, 2004b).

Wetlands based livelihoods

Bangladesh is situated on the floodplain of three major rivers and the water flow is second only to the Amazon River. About 6.7% of the country is always under water, 21% is deeply flooded (more than 90 cm) and around 35% experiences shallow inundation (Ahmed et al., 2005). The wetlands play a very critical role in the rural economy and natural resource base. The livelihoods of about one hundred million people are inextricably linked to the productivity and sustainability of the wetlands.

Importance of fishery livelihoods

Fisheries provide over 40% dietary protein requirements for the population and account for more than 5% of the national GDP. According to the World Bank, Bangladesh is the world leader in freshwater fish production per unit area with 4,016 kg/sq km of water bodies and a 5.5 kg per capita fish production. The fisheries sector provides full-time employment to an estimated 2 million people (Ahmed et al., 2005).

Fisheries livelihoods dominated by the elite

In Bangladesh, water bodies, which are the property of the government, are often leased out for one to three years through an auctioning system that generates considerable sums for the government. But fishermen can rarely afford to bid, so rich investors, who are known as waterlords and are often past or present members of the local institutions of the state, purchase the licenses. They hire fishermen as daily labourers while the sales revenues accrue to the leaseholders. These fisheries have led to the institutionalised exploitation of the fishermen by a small rural elite (Bene, 2003).

Shrimp aquaculture livelihoods

Shrimp farming in coastal areas has brought much foreign exchange, but the clearing of mangroves has led to flooding and severe development-resident conflicts. After a long cycle of boom and bust, the shrimp industry has started a certification programme to move upmarket into value added export markets. The Minister of Commerce for Bangladesh put government support into the programme saying his effort in support for certification was his “commitment for the poor people of the country”.

Key process and institutions for IUCN engagement

The government’s capacity to respond to environmental changes is recognised to be weak and largely donor-driven with several large environmental projects underway. Civil society organizations such as BRAC and Proshika are key players, but often operate like parallel bureaucracies to the state sector.

3.8.5 Pakistan

Declining poverty, but social indicators still poor

Poverty has been declining among Pakistan’s 148 million people, and now 13% of the population is estimated to be living in extreme poverty on less than US$ 1 a day. However, social indicators still remain

some of the worst in Asia with under-five mortality at 110 per 1,000 live births and female literacy at only 30%. These poor social statistics are partly the result of the cultural impediments to gender equity in the country.

Poverty and environment links

Pakistan suffers from some of the most dramatic environmental stresses in the region. Water scarcity is a major problem, forest cover is the lowest in the region at under 2% and is being lost at over 4% a year, indoor and outdoor pollution are widespread and industrial pollution largely unregulated (WRI, 2003). There are significant poverty-environment links since the poor lack access to natural resources, suffer from environment-related ill health and are most affected by environment-related shocks such as floods and droughts. Pakistan's PRSP states that the "poor are most dependent on natural resources for their livelihood and most affected by environmental degradation." In addition to direct links between the poor and the environment, prospects for long-term sustained growth – which is needed for poverty reduction – are increasingly constrained by intense pressure on the country's natural resource base.

Agricultural livelihoods and surface water problems

The agriculture sector faces major environmental challenges, including water scarcity in some areas and waterlogging and salinity in others. Pakistan is estimated to be one of the seven countries that will face serious water shortages by the year 2025. In addition, nearly 38% of the Gross Commanded Area (GCA) is waterlogged, of which 15% is severely waterlogged. Fourteen percent of the surface is saline, of which 6% is severely saline. Salinity is estimated to rob farmers of about 25% of the potential production of major crops. Due to age, overuse and poor maintenance, the delivery efficiency of the canal system is low, ranging from 35-40% from canal head to the root zone. These issues are especially serious in Sindh and Punjab. Moreover, inefficient water delivery and use also mean that, in reality, surface water does not reach many users towards the tail end of the system. Inequity in the distribution of surface water due to deliveries being lower than designed levels, poor operation and maintenance, and illegal diversion is a major concern in Pakistan, and most negatively affects the poorest farmers. Meanwhile the very poorest households in rural Pakistan have no access to irrigation, and in some cases no access to land.

Groundwater problems

Groundwater also suffers from problems exacerbated by electricity subsidies inducing over-pumping. While the situation in each province is different, the impacts are particularly serious for Balochistan that only has deep groundwater and almost no surface water. The situation of declining water tables in Balochistan due to excessive groundwater pumping has reduced water access for the poor. The most glaring example of this is the effect of private tubewells in undermining Balochistan's collective groundwater system known as *karezes* (a mother well with a string of wells connected by tunnels serving over 100 households that share the high costs of installation and maintenance).

Fishery livelihoods

Fishing plays an important role in the national economy. It provides direct and indirect incomes for up to 2 million people. It is a major source of export earnings generating US$ 117 million in 2002-2003. Pakistan is endowed with rich fishery potential along its 885 km coastline. There are about 16,000 fishing boats in the coastal area of Pakistan, which operate in shallow coastal waters. Total production from inland and marine waters is approximately 0.60 million tons.

Forestry livelihoods

Pakistan has a very low level of forest cover, estimated at less than 2%, the lowest in South Asia and one of the lowest in the world. The rapid loss of forests shows no sign of abating and the country has the highest deforestation rate in Asia at over 4% per year. Some of the country is desert, partly explaining the low forest cover, but even in the mountainous areas of Balochistan, forest cover is only 17% with potentially disastrous effects in terms of watershed for the Indus and other rivers. Serious floods in September 1992

were attributed by some to deforestation by commercial cooperatives in the 1980s, and a ban on commercial logging was introduced in 1993 that remained in effect on and off until December 2000. It was briefly lifted and then re-imposed. However deforestation has continued over the decade. Commercially logged forests are mostly located along the Northwest Frontier Province (NWFP). However, tenure disputes, corruption and poor management have meant that the value of the forest has increased deforestation rather than encouraged sustainable management. In NWFP, the reserved forests (97 million hectares) and *guzara* or non-state forests (48 million hectares) are found in the Hazara division, while protected forests (57 million hectares) are mostly situated in the Malakand division. In reserved forests, local populations have no rights although concessions can be given for water and grazing etc. In protected forests locals also receive 60-80% of the proceeds of timber sales. *Guzara* forests are owned by families or other groups, but managed by the Forest Department (except in 1981-1992 when there were forestry cooperatives) (Lubna, 2003). This situation has led to much friction between the Forest Department and local populations.

Politics of environmental decision-making

Over the past decade, environmental policy has begun to respond to these growing challenges. The main achievement has been the development of a policy framework, including the 1997 environmental protection act and national environmental quality standards through a consensus-building process. There have also been programmes to improve rural NRM through more participatory approaches, and to reduce salinization and waterlogging through investments in irrigation. However, these approaches are constrained by political and institutional factors that limit more wide-ranging reforms that would challenge the status quo of politically connected landowners and industrialists and the relevant government departments.

Key process and institutions for IUCN engagement

One of the key processes underway in Pakistan is decentralisation. This has created a new set of actors in both urban and rural spheres, whose responsibilities will include some environmental issues. With the emerging relationships between federal, provincial and local levels still in flux, this is an important opportunity to raise the profile of poverty-environment issues.

The World Bank is an important player in the environmental scene in Pakistan and has recently completed a countrywide environmental analysis (CEA) highlighting environmental issues in the country (World Bank, 2003c). The Asian Development Bank (ADB) is also particularly active in promoting the decentralisation process.

3.8.6 Viet Nam

Rapidly declining poverty

About 18% of Viet Nam's 80 million people live in abject poverty. A decline in poverty has been helped by the country's rapid growth rate at over 7.5% over the last decade, second only to China in the region. Under-five mortality at 39 per 1,000 live births is also lower than many other countries in the region and female literacy is 91%.

Access to improved water sources and sanitation

Despite these indicators, Viet Nam is not doing as well as its income data might suggest. Only 67% of the rural population has access to improved water sources and only 38% of the rural population has access to improved sanitation.

Livelihoods and environmental vulnerability

Viet Nam is particularly prone to natural disasters such as typhoons, floods and drought. On average, more than one million people need emergency relief each year due to natural calamities. Recent examples include the 1997 flooding of the Central Province, droughts in 1997 and 1998, and the floods in the Mekong delta in 2000 (the largest in over 70 years) (UNDP, 2002b).

Box 3.7 Mangrove planting to reduce vulnerability in Viet Nam

The Viet Nam Red Cross has realised that environmental improvements offer a way to reduce coastal vulnerability. They have supported households in the northern coastal province to plant 12,000 hectares of mangroves to break the 1.5 metre waves typically associated with typhoons. The success of this approach was shown when Typhoon Wukong, in October 2000, claimed no lives. In addition, mangrove planting has supported the livelihoods of 7,750 families involved in replanting and harvesting shellfish amongst the mangroves

IFRC-RSC, 2002

The poorest regions of the country, the central highlands and the northern uplands, have a high proportion of ethnic minorities and considerable forest cover (UNDP, 2002b). A survey in one area found that those most dependent on forest resources are ethnic minorities (WWF, 1998). There are also other state lands where the government seeks to increase forest cover. In 1993, the government began the process of allocating forestland to improve ownership. On some low quality land (often bare) households were allocated 50-year leases and on other land households and state forestry enterprises were given annually renewable leases. Households that were allocated bare land received financial assistance. This approach has increased incomes and improved land management, particularly when compared to the previous policy of trying to halt shifting cultivation. However, the state continues to limit user rights and take a significant share of the income earned (FAO, 2001).

Key process and institutions for IUCN engagement

Viet Nam has embarked on its latest five-year plan as well as the Comprehensive Growth and Poverty Reduction Strategy (CGPRS), both of which already include some environmental aspects and thus present important opportunities to incorporate poverty-environment issues into mainstream decision-making. In addition to these developments at the central level, many important environmental decisions are taken at the provincial level and this is an important area of engagement. Institutionally, the newly created Ministry of Natural Resources and the Environment (MONRE) is a reorganization of the sector with a higher political profile, which also creates new opportunities for poverty-environment issues. UNDP is an important player and has a poverty-environment programme underway with MONRE.

3.9 Key processes for IUCN engagement on poverty environment issues

This section identifies four key processes that are underway in Asia and have an important bearing on the poverty-environment debate:

- focus on agricultural and rural development
- spread of the market economy and global trade
- sub-national authorities, decentralisation, devolution and so-called "community management"
- donor coordination and PRS processes.

3.9.1 Focus on agricultural and rural development

Many Asian countries are facing the challenge of how to raise the living standards of the bulk of the rural poor who still depend on agriculture for their livelihoods. This is driven both by economic and political concerns since, although parts of the economy are booming, growth is often failing to reach the rural areas.

This uneven development can be seen, for example, in China where the eastern coast is booming with new factories and infrastructure but western inland areas remain much poorer. In India and Sri Lanka recent elections brought to power governments with a much more leftist agenda that promised to reach out to rural areas and develop agriculture. The objective is also to promote greater integration of the agriculture sector with the rest of the economy. A number of approaches are being tried to revitalise agriculture, including major investments in rural infrastructure, support for rural micro-enterprises, a more protectionist approach to agricultural trade, and increased subsidies for agricultural inputs such as water and fertiliser.

This greater focus on agriculture and rural issues in the Asian context may provide greater political priority to poverty-environment issues. There will be more attention and funds for rural infrastructure such as rural water supply and electricity, which will improve environmental health outcomes. However, there may also be difficult trade-offs if agricultural development puts pressure on undeveloped forests and wetland areas, as is happening in China and Viet Nam. This demonstrates the need to engage constructively with this debate to ensure that poverty-environment issues receive proper attention and are not overlooked.

3.9.2 Spread of the market economy and global trade

Most countries in Asia have accepted the private sector as the so-called "engine of growth". Many state enterprises have been handed over to the private sector. Industrial growth is often rapid. Many countries are lowering trade barriers through regional or bilateral trade agreements. As with developments in agricultural and rural development, these changes hold both opportunities and challenges for taking forward poverty-environment issues.

Engagement with the private sector in terms of environmental management is growing in Asia. In the industrial sector, pollution control and waste minimisation is growing. Typically, there are environmental regulatory agencies responsible for monitoring industrial emissions, such as India's pollution control boards or China's environmental protection agencies. In the natural resource field, companies, particularly exporters, are coming under pressure from foreign buyers, banks and investors to improve their environmental performance. For example, some forestry companies have been stimulated to move to less damaging practices as a result of this pressure.

3.9.3 Sub-national authorities, decentralisation, devolution and community management

In many of the larger Asian countries (and even some of the smaller ones), some of the key natural resource decisions are taken at sub-national level by state or provincial authorities. For example, both forestry and fisheries are often significantly devolved to state governments in China, India and Indonesia. This process is increasing as decentralisation and devolution take place.

Decentralisation is when central government formally cedes power to institutions at lower levels in the political administrative hierarchy. If they are local branches of the central state (e.g. local administrations) this is administrative decentralisation. If they are local authorities downwardly accountable to local people, the process is known as devolution. Powers transferred can include legislative (elaboration of rules), executive (implementing and enforcing decisions), financial and judicial (Ribot, 2002).

While decentralisation and devolution have been general phenomena, they have also applied to natural resources – often with a further delegation of authority to local people to manage or co-manage the resources. There has now been over 20 years of experience with political change through devolving NRM. This takes many forms including control by district organizations (e.g. panchayats in India), village committees (e.g. forest user groups in Nepal) and self initiated organizations (e.g. Orissa). A review of schemes including South Asia found that the poor's perceptions of benefits depended on the degree of access they had prior to devolution, and the length of time with devolution. In some countries, such as parts of China and the Philippines, households responded enthusiastically since decentralised NRM was a considerable improvement from earlier restrictive regimes. However, disillusionment sometimes set in as bureaucracies failed to meet expectations raised by the new policies. The pro-poor changes inherent in these

schemes were driven (or obstructed) by the key actors, including power relations among the beneficiaries, traditional leaders, local government, NGOs and donors.

3.9.4 Donor coordination and poverty reduction strategy processes

With the advent of the MDGs and other reforms within the international development community, donors have become increasingly focused on providing support to low-income countries to reduce poverty and achieve the other MDG targets. As earlier sections have shown, progress in Asia is underway although many gaps remain.

In order to promote improved donor coordination and support greater ownership of policies by low-income country governments, the international community has been supporting countries to develop PRSs. Often, in Asia, these PRSs have been combined with existing government planning processes such as Nepal's five-year plan. These PRSs are important since the World Bank, IMF and many other multilateral and bilateral donors have pledged to link their funding to the priorities identified in PRSs. PRSs also typically identify targets and key actions for government policy. For this reason, PRSs are an important vehicle for the incorporation of poverty-environment issues.

3.10 Key players on poverty-environment for IUCN engagement

This section identifies seven major groups for IUCN to engage with in promoting poverty-environment issues in Asia:

- the rural poor
- civil society groups and the media
- innovative politicians
- government alliances
- environmental regional bodies and groupings
- research organizations and networks
- development agencies and international organizations.

The private sector and sub-national authorities were already covered in the previous section.

3.10.1 Bottom-up coalitions with the rural poor

The poor are not passive in the face of political pressure although they often face major hurdles and opposition. Much can be learned from processes where the poor themselves have initiated political change. Due to the dependence of some poor households on natural resources, they face strong incentives to struggle to protect their access rights. There are some striking examples of poor groups, often with support from others, organizing to demand access to natural resources such as land, fisheries and forests. In urban areas, many slum settlements have organized themselves to demand tenure and services. In the Philippines for example, the barrios in urban areas are locally run low-income neighbourhoods.

3.10.2 Partnerships with other civil society groups and the media

A number of Asian countries, such as Thailand and Sri Lanka have active environmental journalist associations and these can be a key constituency for increasing public concern for the environment. Religious leaders and professional organizations, as well as the better-known NGOs within civil society can also be useful allies.

There is often a tendency to engage with the more urbanised, often English-speaking NGOs based in the capital, but for poverty-environment issues it is often more important to engage with NGOs that have field offices in the more rural areas and which may have better contacts and understanding of on-the-ground realities.

3.10.3 Alliances with innovative politicians

While government bureaucracy is important (see below), earlier sections have argued that pro-poor environmental change is inherently political and thus requires alliances with innovative politicians. One of the challenges of Asia, as in many parts of the world, is that the political elite is often not overly focused on pro-poor policies. This is not always the case; there are active debates on pro-poor policies among some members of the political leadership in China, Viet Nam and to some extent India, Sri Lanka and Pakistan. However, other countries such as Bangladesh, Nepal and Indonesia are still fundamentally unstable and the political class is often involved in a struggle for its own survival.

This suggests that the optimum strategy is to identify the more progressive leaders who can make a difference in terms of pro-poor environmental reform and provide support to them in whatever ways will help. Often these more progressive Ministers will be battling opposition from within from entrenched interested parties within the private and public sector. For example, this has been the approach followed by several external agencies in providing support to the more reform-minded Minister of Forestry in Indonesia.

3.10.4 Government alliances

One of the institutional challenges of environmental management is the range of different agencies that are involved. Most natural resources in South and South East Asia are owned and managed by the state, usually with a central department or ministry of forestry, fisheries, natural resources or the environment. A number of countries now combine these functions. India has a Ministry for Environment and Forests, Viet Nam and Thailand both have a Ministry of Natural Resources and the Environment, and Sri Lanka has a Ministry for Environment and Natural Resources. In many cases, these ministries bring together agencies responsible for forests, protected area management and pollution regulation. However, typically there are different agencies responsible for coastal and aquatic issues, and a host of separate agencies involved in water allocation and management and land degradation. This makes coordination a key task for effective environmental management.

These different institutions often have very different histories:

- **Forest departments** were typically created during the colonial period with a “policing” mentality to protect the forests. Households were traditionally seen as the “problem” rather than the solution to improved forest management. Many forest departments will also provide an uneasy combination of timber production (e.g. through a state timber corporation) and forestry protection. There has been growing pressure over the last decade to hand over the timber production responsibilities to the private sector, and to shift to a more participatory approach to forest management.

- **Environment ministries** have largely been funded by donors over the last two decades, especially since the 1992 Rio Conference on Environment and Development. They tend to focus on the major international conventions such as biodiversity and climate change. This

focus on the international agenda has often made them less aware of pressing national problems such as land degradation.

- **Ministries of water or water agencies** have historically focused on water supply, with very little awareness of sanitation or water resource management. This is starting to change as sanitation has risen on the international agenda and the same is now starting with water resource management encouraged by the WSSD requirement for countries to prepare water resource master plans. However, most agencies are still staffed by engineers whose training, prestige and even benefits from contracts are linked to expanding the water network rather than implementing conservation and demand-side improvements.

- **Ministries of agriculture** have focused on agricultural production and have devoted very little time or resources to tackling land degradation or managing the land resource. Land use planning divisions tend to be sidelined from the major agriculture decisions.

- **Ministries of fisheries** have until recently, like agriculture, focused on increasing fisheries production, typically through subsidies for fishing vessels and gear. There has been little interest in other forms of aquatic production, such as crustaceans. The rapid development of aquaculture has largely been led by the private sector. International pressure and the declining resource base have recently led to more concern with managing the fishery resource itself. But fishery management remains politically much less popular or tangible than handing out fishing boats.

In many of the large countries of Asia, such as China, India and Indonesia, sub-national authorities at state or provincial level will take many of the key decisions. These sub-national agencies will have their own natural resource and environment related agencies.

3.10.5 Asian environmental regional bodies and groupings

Association for South East Asian Nations (ASEAN)

ASEAN organizes annual meetings of environment ministers, which are often also attended by environment ministers from China, Japan and Korea. There is some discussion of developing benchmarks to monitor the performance of member countries. An ASEAN agreement on environmental haze has entered into force and there is an agreement to set up an ASEAN centre for biodiversity.

South Asian Association for Regional Cooperation (SAARC) and South Asian Cooperation on Environment Programme (SACEP)

These two bodies, with slightly different memberships, both assist their South Asian members in undertaking environmental projects.

Mekong River Commission (MRC)

The Mekong is the world's 12th longest river stretching 4,880 km from its source in Tibet to the coast of Viet Nam. Its 795,000-km^2 watershed includes six countries: Cambodia, China, Lao PDR, Myanmar, Thailand and Viet Nam. It is the world's least exploited river in terms of dams and water diversion, but there are major plans to develop it. It has a hydropower generating capacity of 30,000 to 58,000 MW, but as of 1997 less than 5% of this potential had been exploited. The challenge is to equitably harness the irrigation and hydropower potential of the river without undermining its traditional role of providing water for downstream fisheries and rice production. The 900,000 tons of fish caught annually provide the bulk of the animal protein for the population of the lower basin. The Mekong's annual flood cycle deposits 1-3 cm of fertile silt each year in lowland floodplains, especially in Cambodia and Viet Nam. The river-flows in the dry season also reduce salinity penetration from the sea.

The Mekong River Commission (MRC) was set up in 1957 in an attempt to tackle these trade-offs, but was largely defunct due to political turmoil in the region. In 1995 Cambodia, Lao PDR, Thailand and Viet Nam signed the agreement on Cooperation for Sustainable Development of the Mekong Commission, while China and Myanmar have observer status. China, which controls the upper reaches of the river, seems reluctant to join the MRC until it is clear that its plans cannot be stopped by the MRC members. There are clear tensions between China's desire for dam construction and Cambodia and Viet Nam's vulnerability to changes to the downstream flow pattern. There is some potential for compromise, for example dams in Laos from which other countries could purchase the power (WRI, 2002b).

3.10.6 Improving the knowledge base: Asian research organizations and networks and institutions working on environmental issues

Economy and Environment Program for South East Asia (EEPSEA)

This network of environmental economists in South East Asia has been going for over a decade, financing policy studies by South East researchers and providing regular training courses in the region. Its website provides a full listing of publications and regular newsletters. It has been successful in developing national expertise and provides a rich pool of talent for research. (www.eepsea.org).

South Asian Network for Development and Environmental Economics (SANDEE)

This is one of the key groups bringing together environmental academics and researchers from throughout the region. Since its inception three years ago (inspired by EEPSEA), it has financed high quality academic research by South Asian junior academics and produces long and short policy-focused briefs. It also produces a regular newsletter and provides a good vehicle to tap into the considerable technical expertise available in the region (www.sandeeonline.org).

International research networks on Asian environmental issues

There are a number of international networks for research on Asian environmental issues, including the International Development Research Committee (IDRC). A key resource is the research network of the Consultative Group on International Agricultural Research (CGIAR). This network includes the International Water Management Institute (IWMI) based in Sri Lanka and the Centre for International Forestry Research (CIFOR) based in Indonesia. Both IWMI and CIFOR are undertaking path-breaking research on poverty-environment issues.

3.10.7 Partnerships with development agencies and international organizations

Asian Development Bank

The ADB is a major provider of grant-based technical assistance and project loans to Asian countries. Following the revision of its environmental policy in 2002 (ADB, 2002) it is focusing much more on poverty-environment issues, including environmental health, livelihoods and vulnerability. As a bank, it is required to undertake environmental appraisals for all its loans, many of which are still for large-scale infrastructure such as roads. In addition to these safeguard functions, the ADB is developing environmental projects. It is seeking to mainstream environmental issues into its lending by using Country Environmental Analysis to improve the understanding of poverty related environmental issues.

World Bank

The World Bank has, through its revised Environmental Strategy of 2001, given a much stronger emphasis to poverty-environment issues (World Bank, 2001), which like the ADB gives a strong emphasis to the livelihoods, health and vulnerability framework. Like ADB, much of the environmental staff in the Bank is responsible for compliance with the different environmental procedures and safeguards. However, the Bank is also seeking to develop a larger portfolio of environmental projects and take a more pro-active approach on poverty-environment issues, for example by giving emphasis to integrating poverty-environment issues within PRSs.

Bilaterals

Many bilaterals have been active in the environmental field in Asia, particularly the Nordics, the Dutch and USAID. SDC has supported forestry interventions in Viet Nam and Pakistan, as described in Part 5 of this review on Swiss programmes relating to poverty-environment linkages. However, as a result of the move away from projects and towards more programmatic financing, there has been a decline in environmental projects with some donors. Many agencies are nevertheless open to pursuing poverty-environment concerns in line with a commitment to supporting countries in achieving the MDGs.

UN agencies: UNDP, UNEP, WHO (Asian regional office), FAO, etc.

UNDP is supporting a number of environmental projects and programmes in the region, although the budget is typically lower than the ADB or World Bank. However, in some countries, such as Viet Nam, governments trust the UN more than multilateral banks. The FAO is also particularly active in the forestry and fisheries sectors. UNEP and WHO provide technical assistance in some areas. These agencies are also becoming more engaged in the poverty-environment agenda.

Global Environment Facility (GEF)

GEF projects can be implemented by several agencies, but the World Bank remains the largest implementing agency. GEF is particularly active in biodiversity projects in Asia, but is also concerned with land degradation and climate change.

Part 4: Case Study - Western Africa

By Nadine Speich

4.1 Scope of the paper

The scope of this paper is to present the poverty status in Western Africa and the relationship between poverty and environmental destruction in this region. This paper aims to present a framework of cooperation amongst international and national associations with the aim of protecting the environment and at the same time reducing poverty in Western Africa.

4.2 Methodology

4.2.1 Approach

The first part of this study defines the Western African countries and presents their data profiles in terms of economic and social indicators.

This is followed by a definition of poverty and an overview of the poverty and environmental status in Western Africa. In this context, we outline the relationship between poverty and environment and present the references to environment in the PRSP for the region.

Finally we present the initiatives and organizations active in Western Africa. After considering new developments in the field of poverty reduction and environmental protection in Western Africa, we present an overview of possible organizations for knowledge exchange. A selection of criteria is proposed in order to take into account organizations that are active in the field of poverty reduction and environment.

4.2.2 Data & information collection

The main investigation was conducted by looking at the web sites of the main organizations that are present and/or active in Western Africa and their cooperation and development activities, such as:

- African Rice Centre
- Chronic Poverty Research Centre
- Centre Régional pour l'Eau Potable et l'Assainissement à faible coût
- Food and Agriculture Organization
- International Fund for Agricultural Development
- International Center for Agricultural Research into Dry Areas
- International Institute for Environment and Development
- International Monetary Fund
- New Partnership for Africa's Development (NEPAD)
- Réseau des Organisations Paysannes et des Producteurs Agricoles de l'Afrique de l'Ouest (ROPPA)

- Resource Centre on Urban Agriculture and Forestry
- United Nations Conference on Trade and Development
- United Nations Environment Programme
- The African Development Bank
- The World Bank

Specific interviews were also conducted, especially with collaborators of the SDC.

4.3 Western Africa: an introduction

The Western African sub-region comprises 17 countries with a population of 250 million people, half of which live in Nigeria.

As per the African Development Bank (AfDB), countries in West Africa include Benin, Burkina Faso, Cameroon, Cape Verde, Chad, Cote d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo[4]. Although Chad is located in Central Africa, it is a French-speaking country and is thus also included in the research.

Figure 4.1 Map of the Western African region

Source: http://www.fao.org/WAICENT/faoinfo/economic/giews/french/basedocs/afouest.htm

These areas are characterized by abundant marine resources, beaches and intrinsic values that have long motivated coastal urbanisation and tourism and increased socio-economic activities. Presently, these resources are exploited with little attention for the environmental consequences.

[4] *http://www.afdb.org/african_countries/regions_west.htm?n1=3&n2=2&n3=0*

Countries in this region are among the least developed countries in the world. People in rural areas depend on natural resources for their livelihood, so environmental protection has today become a key issue for poverty reduction. The protection of natural resources is not only essential for food security, it is also necessary in order to address long-term concerns such as protecting biodiversity, generating income based on natural resource valorisation and combating desertification.

Although the population is mainly concentrated in rural areas, urban population is expected to increase from 35% in 1995 to 55% in 2015, so that the interactions between urban and rural areas become a major preoccupation.

The West African sub-region has also been characterized by armed conflicts and undemocratic changes in the political regime, sometimes accompanied by civil unrest. The 1990s saw a shift to a democratic political regime in several countries, but at the same time the region has been afflicted by internal conflicts, and the number of countries with internal conflicts increased in the 1990s. The effect of all of this has been to destroy the livelihoods of hundreds of thousands of people living in the affected areas, and countries not involved in the internal conflicts have been affected by receiving the refugees. In some cases the war has crossed borders causing instability in neighbouring countries.

4.4 West African countries – an overview

Country	Current environmental issues	International environmental agreements	Poverty (% of population below poverty line)[5]	Economy
Benin[6]	Inadequate supplies of potable water; poaching threatens wildlife populations; deforestation; desertification[7].	*Party to:* Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Ozone Layer Protection, Ship Pollution, Wetlands.	In rural areas: 31.4% (2002). In urban areas: 22.2% (2002)[8].	Underdeveloped and dependent on subsistence agriculture, cotton production and regional trade. Economic policy reforms and political stability have enabled Benin to achieve a 4.9% average annual economic growth in 1991-2001[9]. Exports: cotton, palm oil products, coffee, crude oil and cocoa beans. Despite a decade of positive per capita income growth, data suggests that poverty has not fallen significantly, particularly in the rural areas[10].
Burkina Faso[11]	Recent droughts and desertification severely affecting agricultural activities, population distribution, and the economy; overgrazing; soil degradation; deforestation[12].	*Party to:* Biodiversity, Climate Change, Desertification, Environmental Modification, Hazardous Wastes, Law of the Sea, Marine Dumping, Ozone Layer Protection.	46.4% (2003 est.), incidence of poverty being predominantly rural[13].	Among the poorest countries in the world. The high population density and limited natural resources result in poor economic prospects for the majority of its citizens. 90% of the population is engaged in agriculture (subsistence). Cotton is the key crop. Industry dominated by unprofitable government-controlled corporations. After currency devaluation (1994) the government updated its development program in conjunction with international agencies, and exports and economic growth have increased.
Cameroon[14]	Water-borne diseases are prevalent; deforestation; overgrazing; desertification; poaching; overfishing[15].	*Party to:* Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Ozone Layer Protection, Tropical Timber 83, Tropical Timber 94.	48% (2000)[16].	Has one of the best-endowed primary commodity economies in the region (oil resources and favourable agricultural conditions), but faces the problems of other underdeveloped countries. Since 1990, the government has embarked on various IMF and WB programs designed to spur business investment, increase efficiency in agriculture, improve trade, and re-capitalize the nation's banks. IMF is pressing for more reforms, including increased budget transparency, privatisation, and poverty reduction programs. International oil and cocoa prices have an impact on the economy.

[5] *The poverty line is conceptualised as a minimum standard required by an individual to fulfil his basic food and non-food needs.*
[6] *Country data profile included in Annex 4A.*
[7] *Central Intelligence Agency, The World Factbook 2003.*
[8] *Source: Republic of Benin, Committee for Development and fight against poverty, "Benin Poverty Reduction Strategy Paper 2003-2005", December 2002.*
[9] *http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/BENINEXTN/*
[10] *http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/BENINEXTN/*
[11] *Country data profile included in Annex 4B.*
[12] *Central Intelligence Agency, The World Factbook 2003.*
[13] *The World Bank Group, "Country Brief: Burkina Faso", September 2004.*
[14] *Country data profile included in Annex 4C.*
[15] *Central Intelligence Agency, The World Factbook 2003.*

Cape Verde[17]	Soil erosion; demand for wood used as fuel has resulted in deforestation; desertification; environmental damage has threatened several species of birds and reptiles; illegal beach sand extraction; overfishing[18].	*Party to:* Biodiversity, Climate Change, Desertification, Environmental Modification, Hazardous Wastes, Law of the Sea, Marine Dumping, Ozone Layer Protection.	30% (2000)[19].	Service-oriented economy (commerce, transport, tourism, and public services, accounting for 72% of GDP). Suffers from a poor natural resource base, including serious water shortages exacerbated by cycles of long-term drought. Although 70% of population lives in rural areas, the share of agriculture in GDP (2001) was only 11%. 82% of food must be imported. It annually runs a high trade deficit, financed by foreign aid and remittances from emigrants. Economic reforms aimed at developing the private sector and attracting foreign investment to diversify the economy.
Chad (Central Africa)[20]	Inadequate supplies of potable water; improper waste disposal in rural areas contributes to soil and water pollution; desertification[21].	*Party to:* Biodiversity, Climate Change, Desertification, Endangered Species, Ozone Layer Protection, Wetlands. *Signed, but not ratified:* Law of the Sea, Marine Dumping.	80% (2001 est.)[22].	Agricultural economy will continue to be boosted by major oilfield and pipeline projects that began in 2000. Over 80% of population relies on subsistence farming and stockbreeding for its livelihood. Cotton, cattle, gum arabic provide the bulk of export earnings (will begin to export oil in 2004). It relies on foreign assistance and foreign capital for most public and private sector investment projects. A consortium led by 2 US companies has been investing $3.7 bn to develop oil reserves estimated at 1 bn barrels in southern Chad.
Cote d'Ivoire[23]	Deforestation (most of the country's forests - once the largest in West Africa - have been heavily logged); water pollution from sewage and industrial and agricultural effluents[24].	*Party to:* Biodiversity, Climate Change, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Dumping, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands.	35% (1995 est.)[25].	Among the world's largest producers and exporters of coffee, cocoa beans and palm oil. Economy highly sensitive to fluctuations in international prices for these products and to weather conditions. Despite government attempts to diversify the economy, still heavily dependent on agriculture and related activities, which engage about 68% of the population. Economy began a comeback after devaluation of the currency (1994), improved prices for cocoa and coffee, growth in non-traditional primary exports (pineapples and rubber), limited trade and banking liberalization, offshore oil and gas discoveries, and generous external financing and debt rescheduling. Government adherence to donor-mandated reforms led to a jump in growth to 5% annually during 1996-1999. Growth was negative in 2000-03 (difficulty of meeting the conditions of international donors, low prices of key exports, and severe civil war).

[16] *Central Intelligence Agency, The World Factbook 2003.*
[17] *Country Data Profile included in Annex 4D.*
[18] *Central Intelligence Agency, The World Factbook 2003.*
[19] *Central Intelligence Agency, The World Factbook 2003.*
[20] *Country data profile included in Annex 4E.*
[21] *Central Intelligence Agency, The World Factbook 2003.*
[22] *Central Intelligence Agency, The World Factbook 2003.*
[23] *Country Data Profile included in Annex 4F.*
[24] *Central Intelligence Agency, The World Factbook 2003.*
[25] *Central Intelligence Agency, The World Factbook 2003.*

The Gambia[26]	Deforestation; desertification; water-borne diseases prevalent[27].	*Party to:* Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Ozone Layer Protection, Ship Pollution, Wetlands.		No important natural resources and limited agricultural base. 75% of the population depends on crops and livestock for livelihood. Small-scale manufacturing activity features the processing of peanuts, fish and hides. Re-export trade constitutes a major segment of economic activity, but a government-imposed pre-shipment inspection plan (1999) and instability of the currency have drawn some of the re-export trade away from the Gambia. The government's seizure of the peanut firm Alimenta (1998) eliminated the largest purchaser of Gambian groundnuts; the following two marketing seasons saw substantially lower prices and sales. Decline in tourism in 2000 has also held back growth. Unemployment and underemployment rates are extremely high. Short-run economic progress highly dependent on sustained bilateral and multilateral aid, on responsible government economic management and on expected growth in the construction sector.
Ghana[28]	Recurrent drought in north severely affects agricultural activities; deforestation; overgrazing; soil erosion; poaching and habitat destruction threatens wildlife populations; water pollution; inadequate supplies of potable water[29].	*Party to:* Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands. S*igned, but not ratified:* Marine Life Conservation.	31.4% (1992 est.)[30].	Well endowed with natural resources, it has roughly twice the per capita output of the poorer countries in West Africa, but remains heavily dependent on technical and international financial assistance. Gold, timber and cocoa production are major sources of foreign exchange. The domestic economy continues to revolve around subsistence agriculture, which accounts for 35% of GDP and employs 60% of the work force. Policy priorities include tighter monetary and fiscal policies, accelerated privatisation, and improvement of social services.
Guinea[31]	Deforestation; inadequate supplies of potable water; desertification; soil contamination and erosion; overfishing, overpopulation in forest region; poor mining practices have led to environmental damage[32].	*Party to:* Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Ozone Layer Protection, Wetlands, Whaling.	40% (2003 est.)[33].	Possesses major mineral, hydropower and agricultural resources, yet remains an underdeveloped nation. The country possesses over 30% of the world's bauxite reserves and is the second-largest bauxite producer. The mining sector accounted for 75% of exports in 1999. Long-run improvements in government fiscal arrangements, literacy, and the legal framework are needed if the country is to move out of poverty. Fighting along the borders with Sierra Leone and Liberia has caused major economic disruptions. Guinea is not receiving multilateral aid. The IMF and World Bank cut off most assistance in 2003.

[26] *Country Data Profile included in Annex 4G.*
[27] *Central Intelligence Agency, The World Factbook 2003.*
[28] *Country Data Profile included in Annex 4H.*
[29] *Central Intelligence Agency, The World Factbook 2003.*
[30] *Central Intelligence Agency, The World Factbook 2003.*
[31] *Country Data Profile included in Annex 4I.*
[32] *Central Intelligence Agency, The World Factbook 2003.*
[33] *Central Intelligence Agency, The World Factbook 2003.*

Guinea Bissau[34]	Deforestation; soil erosion; overgrazing; overfishing[35].	*Party to:* Biodiversity, Climate Change, Desertification, Endangered Species, Law of the Sea, Wetlands.		One of the 10 poorest countries in the world. Depends mainly on farming and fishing. Cashew crops have increased remarkably in recent years. Exports: fish and seafood along with small amounts of peanuts, palm kernels and timber. Fighting between Senegalese-backed government troops and a military junta destroyed much of the country's infrastructure and caused widespread damage to the economy in 1998. Civil war led to a 28% drop in GDP that year, with partial recovery in 1999-2002. Before the war, trade reform and price liberalization were the most successful part of the country's structural adjustment program under IMF sponsorship. Tightening of monetary policy and private sector development had also begun to reinvigorate the economy. Development of petroleum, phosphate and other mineral resources is not a near-term prospect due to high costs. However, unexploited offshore oil reserves could provide much-needed revenue in the long run. Inequality of income distribution is one of the most extreme in the world.
Liberia[36]	Tropical rain forest deforestation; soil erosion; loss of biodiversity; pollution of coastal waters from oil residue and raw sewage[37].	*Party to:* Biodiversity, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94. *Signed, but not ratified:* Climate Change, Environmental Modification, Law of the Sea, Marine Life Conservation.	80% [38].	Civil war and misgovernment have destroyed much of the economy, especially the infrastructure in and around Monrovia. Richly endowed with water, mineral resources, forests and a climate favourable to agriculture, it had been a producer and exporter of basic products - primarily raw timber and rubber. The departure of the former president (Taylor) to Nigeria in 2003, the establishment of the all-inclusive National Transition Government of Liberia (NTGL) and the arrival of a UN mission are all encouraging signs that the political crisis is coming to an end.
Mali[39]	Deforestation; soil erosion; desertification; inadequate supplies of potable water; poaching[40].	*Party to:* Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Ozone Layer Protection, Wetlands.	64% average; 30% of the total population living in urban areas; 70% of the total population living in rural areas) (2001 est.)[41].	Among the poorest countries in the world, with 65% of its land area desert or semi-desert and with a highly unequal distribution of income. Economic activity is largely confined to the riverside area irrigated by the Niger. 10% of the population is nomadic and 80% of the labour force is engaged in farming and fishing. Industrial activity concentrates on processing farm commodities. It is heavily dependent on foreign aid and vulnerable to fluctuations in world prices for cotton, its main export, along with gold. The government has continued its successful implementation of an IMF-recommended structural adjustment program that is helping the economy grow, diversify, and attract foreign investment. Adherence to economic reform and devaluation of the currency (1994) pushed up economic growth to a 5% average in 1996-2002.

[34] *Country Data Profile included in Annex 4J.*
[35] *Central Intelligence Agency, The World Factbook 2003.*
[36] *Country Data Profile included in Annex 4K.*
[37] *Central Intelligence Agency, The World Factbook 2003.*
[38] *Central Intelligence Agency, The World Factbook 2003.*
[39] *Country Data Profile included in Annex 4L.*
[40] *Central Intelligence Agency, The World Factbook 2003.*
[41] *The World Bank Group, "Country Brief: Mali", September 2004.*

Mauritania[42] (Northern Africa)	Overgrazing, deforestation, and soil erosion aggravated by drought are contributing to desertification; very limited natural fresh water resources away from the Senegal river, which is the only perennial river[43].	*Party to:* Biodiversity, Climate Change, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Ozone Layer Protection, Ship Pollution, Wetlands.	50% (2004 est.)[44].	Half the population still depends on agriculture and livestock for a livelihood. Extensive deposits of iron ore, which account for 40% of total exports. Decline in world demand for this ore has led to cutbacks in production. The nation's coastal waters are among the richest fishing areas in the world, but overexploitation by foreigners threatens this key source of revenue. In the past, drought and economic mismanagement resulted in a build-up of foreign debt. In 2000, it qualified for debt relief under the HIPC initiative and in 2001 received strong support from donor and lending countries. In 2001, exploratory oil study indicated potential extraction at current world oil prices. New investment code approved in 2001 improved the opportunities for direct foreign investment. Ongoing negotiations with the IMF (problems of economic reforms and fiscal discipline). Substantial oil production and exports will not begin until 2005. Meantime the government emphasizes reduction of poverty, improvement of health and education, and promoting privatisation of the economy.
Niger[45]	Overgrazing; soil erosion; deforestation; desertification; wildlife populations threatened because of poaching and habitat destruction[46].	*Party to:* Biodiversity, Climate Change, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Ozone Layer Protection, Wetlands. S*igned, but not ratified:* Climate Change-Kyoto Protocol, Law of the Sea.	63% (1993 est.)[47].	One of the poorest countries in the world with minimal government services and insufficient funds to develop its resource base. Economy centres on subsistence agriculture, animal husbandry and re-export trade; increasingly less on uranium, because of declining world demand. Currency devaluation (1994) boosted exports of livestock, cowpeas, onions and the products of the small cotton industry. The government relies on bilateral and multilateral aid for operating expenses and public investment (suspended following the 1999 coup d'état). In 2000-2001, the World Bank approved a structural adjustment loan of US$ 105 million to help support fiscal reforms. Reforms could prove difficult given the government's bleak financial situation. The IMF approved a US$ 73 million poverty reduction and growth facility in 2000 and announced US$ 115 million in debt relief under the HIPC initiative. Further disbursements of aid occurred in 2002. Future growth may be sustained by exploitation of oil, gold, coal and other mineral resources.

[42] *Country Data Profile included in Annex 4M.*
[43] *Central Intelligence Agency, The World Factbook 2003.*
[44] *Central Intelligence Agency, The World Factbook 2003.*
[45] *Country Data Profile included in Annex 4N.*
[46] *Central Intelligence Agency, The World Factbook 2003.*
[47] *Central Intelligence Agency, The World Factbook 2003.*

Nigeria[48]	Soil degradation; rapid deforestation; urban air and water pollution; desertification; oil pollution - water, air, and soil; has suffered serious damage from oil spills; loss of arable land; rapid urbanization[49].	*Party to:* Biodiversity, Climate Change, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Dumping, Marine Life Conservation, Ozone Layer Protection, Wetlands.	60% (2000 est.)[50].	Long characterized by political instability, corruption, inadequate infrastructure, and poor macroeconomic management. Is now undertaking some reforms under the new civilian administration. The former military rulers failed to diversify the economy away from over-dependence on the oil sector, which provides 20% of GDP, 95% of foreign exchange earnings, and about 65% of budgetary revenues. The largely subsistence agricultural sector has failed to keep up with rapid population growth (it is Africa's most populous country) and the country, once a large net exporter of food, must now import food. Following the signing of an IMF stand-by agreement in 2000, it received a debt-restructuring deal from the Paris Club and a US$ 1 billion credit from the IMF, both contingent on economic reforms. Nigeria pulled out of its IMF program in 2002 after failing to meet spending and exchange rate targets, making it ineligible for additional debt forgiveness from the Paris Club. The government has lacked the political will to implement the market-oriented reforms urged by the IMF, such as modernizing the banking system, curbing inflation and resolving regional disputes over the distribution of earnings from the oil industry. In 2003, however, the government deregulated fuel prices and announced the privatisation of the country's four oil refineries.
Senegal[51]	Wildlife populations threatened by poaching; deforestation; overgrazing; soil erosion; desertification; overfishing[52].	*Party to:* Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Life Conservation, Ozone Layer Protection, Ship Pollution, Wetlands, Whaling.	54% (2001 est.)[53].	In 1994, Senegal undertook an economic reform program, with the support of the international donor community, which began with a 50% devaluation of the currency. Government price controls and subsidies have been steadily dismantled. After seeing its economy contract by 2.1% (1993), Senegal made an important turnaround, thanks to the reform program, with real growth in GDP averaging 5% annually (1995-2003). Annual inflation had been pushed down to the low single digits. As a member of the West African Economic and Monetary Union (WAEMU), Senegal is working towards greater regional integration with a unified external tariff. Senegal also realized full Internet connectivity in 1996, creating a mini-boom in IT-based services. Private activity now accounts for 82% of GDP.

[48] *Country Data Profile included in Annex 4O.*
[49] *Central Intelligence Agency, The World Factbook 2003.*
[50] *Central Intelligence Agency, The World Factbook 2003.*
[51] *Country Data Profile included in Annex 4P.*
[52] *Central Intelligence Agency, The World Factbook 2003.*
[53] *Central Intelligence Agency, The World Factbook 2003.*

Sierra Leone[54]	Rapid population growth pressuring the environment; over-harvesting of timber, expansion of cattle grazing, and slash-and-burn agriculture have resulted in deforestation and soil exhaustion; civil war depleting natural resources; overfishing[55].	*Party to:* Biodiversity, Climate Change, Desertification, Endangered Species, Law of the Sea, Marine Life Conservation, Ozone Layer Protection, Ship Pollution, Wetlands. *Signed, but not ratified:* Environmental Modification.	68% (1989 est.)[56].	Extremely poor nation with tremendous inequality in income distribution. Substantial mineral, agricultural, fishery resources, but the economic and social infrastructure is not well developed and serious social disorders continue to hamper economic development, following an 11-year civil war. 66% of the working-age population engages in subsistence agriculture. Manufacturing consists mainly of raw materials processing and light manufacturing for the domestic market. Major source of hard currency consists of diamond mining. The fate of the economy depends on the maintenance of domestic peace and the continued receipt of substantial aid from abroad, essential to offset the severe trade imbalance and to supplement government revenues.
Togo[57]	Deforestation attributable to slash-and-burn agriculture and the use of wood for fuel; water pollution presents health hazards and hinders the fishing industry; air pollution increasing in urban areas[58].	*Party to:* Biodiversity, Climate Change, Desertification, Endangered Species, Law of the Sea, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands.	32% (1989 est.)[59].	Heavily dependent on commercial and subsistence agriculture that provides employment for 65% of the labour force. Cocoa, coffee, and cotton generate about 40% of export earnings, with cotton being the most important cash crop. World's fourth-largest producer of phosphate, but production fell by 22% in 2002 due to power shortages and the cost of developing new deposits. The government's long efforts, supported by the WB and IMF, to implement economic reform measures, encourage foreign investment, and bring revenues in line with expenditures has moved slowly. Progress depends on following through on privatisation, increased openness in government financial operations, progress toward legislative elections and continued support from donors.

[54] *Country Data Profile included in Annex 4Q.*
[55] *http://www.cia.gov/cia/publications/factbook/geos/sl.html*
[56] *http://www.cia.gov/cia/publications/factbook/geos/sl.html*
[57] *Country Data Profile included in Annex 4R.*
[58] *http://www.cia.gov/cia/publications/factbook/geos/to.html*
[59] *http://www.cia.gov/cia/publications/factbook/geos/to.html*

4.5 Poverty in Western Africa

4.5.1 Definition of poverty and poverty dimensions

Common definitions of poverty rely on economic criteria. UNCTAD's 2002 report on least developed countries defines generalised poverty as "a situation in which a major part of the population lives at or below income levels sufficient to meet their basic needs and in which the available resources in the economy, even when equally distributed, are barely sufficient to cater for the basic needs of the population on a sustainable basis"[60].

More recently, the World Bank provided a definition of poverty that also encompasses social, environmental and ethical factors. According to the definition of poverty of the World Bank in its Development report 2000/2001[61] poverty is a holistic concept with four major dimensions. The main areas of concern for the region and for each of the four dimensions are presented in Table 4.1.

Table 4.1 Main areas of concern in Western Africa

Poverty dimensions	Main areas of concern in Western Africa
Lack of assets and opportunities	• Employment and income situation, in particular of vulnerable groups. • Access to finance, markets, land. • Access to international markets for domestic products that are produced in a sustainable manner, with a view to protecting the environment (for instance organic cotton, karité products, dry food).
Powerlessness	• Governance and conflict situations. • Decentralisation processes. • Land tenure.
Vulnerability	• Basic insurance. • Droughts.
Lack of capability	• Health. • Literacy. • Basic services. • Access to information and IT.

Poverty is a multidimensional phenomenon covering the low level of income and consumption expenditure but, in addition, these two last factors impact and are influenced by low levels of educational achievement and low health conditions. Globally, low levels of health conditions, educational achievement and assets as well as limited access to basic utilities and a sense of exclusion from mainstream society can lead to a vicious circle of misery and poverty from which it is difficult to emerge.

[60] *UNCTAD,2002, page 39.*
[61] *World Bank, 2001.*

4.5.2 Economic and social aspects of poverty in Western African countries

Economic performance[62]

The West African sub-region consists largely of low-income countries with a Gross National Income (GNI)[63] per capita ranging from US$ 1,330 in Cape Verde to US$ 130 in Sierra Leone (2000), the median GNI being US$ 330. The low-income per capita figures in West Africa are suggestive of generalised and widespread poverty.

"On the basis of the purchasing power parity US$ 2 per day poverty line, the incidence of poverty among ten of the least developed West African countries ranged between 60% and 94% during 1995-2000. Evidence of widespread poverty in the region is suggestive of a substantial proportion of the population being poor over extended periods of time"[64].

It appears correct to say, then, that there is generalised poverty in several Western African countries. According to IFAD's 2001 Report on Poverty in Western and Central Africa[65], the poor population of this region counts about 120 million people. Furthermore, as per UNEP's Global Environment Outlook 3[66], 35 million people were living with hunger in Western Africa (209 million for the whole continent) in 2002.

In many countries in the region there has been an increase in agriculture's share of the GDP[67] and agriculture is more important in the GDP compared to the average for sub-Saharan Africa and low-income countries. In all the countries, except for Cape Verde, Cameroon and Côte d'Ivoire, more than half the population is employed in agriculture. This contrasts with this sector's contribution to the GDP, suggesting that the level of agricultural productivity is low[68]. Industry's share of the GDP expanded between 1990-2001, but in many countries it is driven to a large extent by the mining sector (Nigeria and Ghana). The services sector is the largest sub-sector in many economies, but in a certain number of countries its relative contribution to the GDP has declined.

Social indicators[69]

Adult illiteracy rates have fallen since the 1990s, but the rates remains high compared to the average for sub-Saharan Africa. Adult illiteracy rates have declined for both men and women, however a gender differential remains.

Infant mortality rates have declined in all countries, however in many countries in 2000 the infant mortality rate was higher than the one for least developed countries.

HIV/AIDS is a health problem in many West Africa countries[70] and has had a damaging impact on the work force and livelihoods[71]. It has been estimated that labour loss in Cote d'Ivoire and Cameroon could rise to 11.4% and 10.7% respectively because of the HIV/AIDS epidemic[72].

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[62] *Growth Performance and Poverty Indicators included in Annex 4S.*

[63] *GNI per capita is the gross national income, converted to U.S. dollars divided by the midyear population. GNI is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad. GNI, calculated in national currency, is usually converted to U.S. dollars at official exchange rates for comparisons across economies, although an alternative rate is used when the official exchange rate is judged to diverge by an exceptionally large margin from the rate actually applied in international transactions.*

[64] *Abena et al., 2003*

[65] *IFAD, 2001*

[66] *UNEP,2002.*

[67] *GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.*

[68] *As per comparison between the agricultural sector's contribution to the GDP and proportion of the workforce employed.*

[69] *Social Indicators included in Annex 4T.*

[70] *Sero-prevalance rates of 11% in Côte d'Ivoire, 8% Cameroon, 7% in Burkina Faso, 6% in Togo and 5% in Niger. Reference: Abena et al., 2003.*

Access to safe water increased in almost all countries, with the exception of The Gambia, Guinea, Sierra Leone (not surprising in view of the civil war during most of the 1990s) and Togo.

4.6 The environmental status in West Africa

4.6.1 Land and agriculture

Land resources include soil (important for agriculture), land cover (important for the environment) and landscape (important for human habitat and welfare). In the last 30 years the main driving force leading to pressure on land resources has been increasingly for food production. The trend from 1985 to 1995 showed population growth racing ahead of food production, particularly in Africa[73].

Africa's total land area covers 29.6 million km^2. Land is central to development in Africa since 60% of the population is dependent on agriculture for livelihoods. The main issues related to land include increasing degradation and desertification together with inappropriate and inequitable land tenure systems. Other problems include a decline in soil fertility, soil contamination, land management and conservation, gender imbalances in land tenures[74] and conversion of natural habitat to agricultural or urban uses.

A major concern is land degradation, which leads to significant reductions in the productive capacity of the land. About 17% of land in Africa is considered ranging from lightly degraded to extremely degraded (about 5 million hectares are considered extremely degraded)[75]. Human activities contributing to land degradation include unsuitable agricultural land use, poor soil and water management practices, fuel wood consumption[76], deforestation, removal of natural vegetation, overgrazing, improper crop rotation and poor irrigation practices to which we must add the industry and urbanisation process. Natural disasters (including droughts, floods and landslides), the process of desertification (affecting 46% of Africa with 55% of that area being at high or very high risk)[77] and climate change are also contributors. Soil erosion is a major factor in land degradation and has severe effects on soil functions. The main types of soil degradation are water erosion, wind erosion, chemical degradation and physical degradation. Causes of soil degradation include overgrazing, deforestation, agricultural activities, over-exploitation of vegetation and industrial activities.

The percentage of agricultural land (cultivated and pasture) amounts to 39% in Western Africa. Production has increased considerably over the last 30 years, principally due to the expansion of land under cultivation, but also thanks to improvements in cultivation methods and increased use of agrochemicals. The expansion of agriculture involved the cultivation of marginal areas or clearance of natural habitats (forests and wetlands). Such conversion is a major driving force behind land degradation. Draining wetlands for agriculture threatens habitat and biodiversity and the livelihoods of pastoralists and wildlife. Loss of natural habitats has reduced vegetation cover and exposed soils to wind and water erosion, which is extensive in many part of Africa. Soil erosion reduces the productivity of land, requiring the increased use of fertilizers and chemicals to counterbalance falling productivity. Only large-scale farmers may implement this.

Policies on land management have generally failed to address the causes of land degradation. The United Nations Convention to Combat Desertification (UNCCD) points out that land degradation is linked to poverty, and that addressing this issue requires the participation of the resource users and providing them with alternatives for their livelihood options[78].

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[71] *For example cotton, coffee and cocoa production in Cote d'Ivoire has been negatively affected by the spread of the disease.*
[72] *IFAD, 2001*
[73] *UNFPA, 2001.*
[74] *Inequitable land distribution patterns are common in Africa between genders, races, socio-economic classes as well as between private and state-ownership. This affects access to land and associated resources as well as land management practices.*
[75] *UNEP,2002.*
[76] *Woodfuel is the primary source of energy in many developing regions.*
[77] *The worst affected areas are along the desert margin, and in total about 485 million people are affected. Source: UNEP, 2002.*
[78] *UNCCD, 2001*

4.6.2 Forests

Forests provide environmental services to nature[79] and humans[80] and are sources of economically valued products[81]. Deforestation is a major concern and represents an enormous loss of natural economic wealth to the continent. Major direct causes of forest degradation brought about by humans include over-harvesting of industrial woods, fuel wood and other forest products and overgrazing. Underlying causes include poverty, population growth, markets, trade in forest products and macroeconomic policies. Forests are also subject to natural factors.

Forests influence and are influenced by climate change[82] and their management or destruction can affect the course of global warming and are critically important for maintaining biological diversity.

Africa's forest cover is estimated at 650 million hectares (2000), constituting 17% of the world's forests. During 1990-2000, Africa lost more than 50 million hectares at an annual average rate of 0.7%. In the 1990s most of the deforested areas were converted to agricultural land (small-scale agricultural enterprises). The deforestation rate is highest in Western Africa compared to the continent as a whole (see Table 4.2)[83].

Table 4.2 Deforestation in Western Africa

Change in forest land 1990-2000	Total land area (million hectares)	Total forest 1990 (million hectares)	Total forest 2000 (million hectares)	% of land forested 2000	Change in 1990-2000 (million hectares)	% change per year
Western Africa	605.6	85.1	72.5	12.0	-12.6	-1.53[84]

Selective vegetation removal contributes to loss of forest quality and biodiversity, over-harvesting of non-timber resources adds to this problem. Also bushmeat trade[85] (Central and Western Africa) may be endangering a number of forest-dwelling mammals. Pressure on forests and woodlands are exacerbated by the construction of roads that open up access to closed forest areas, making the resources more accessible and their trade more profitable.

4.6.3 Biodiversity

In Africa, in the last 30 years, habitat loss and degradation have been major issues and bushmeat trade has had a significant impact on biodiversity. Biodiversity resources are also extensively used for subsistence and commercial purposes. The main response to loss of natural habitat has been the establishment and extension of protected areas[86], but lack of financial support and weak law enforcement are common problems in African protected areas. A key trend in the last 30 years has been the increasing involvement of local people in conservation initiatives, allowing people living near protected areas to participate in land management decisions, giving people rights to wildlife resources and ensuring that local people derive economic benefits from wildlife conservation (community-based conservation programmes).

[79] *Soil generation, soil and water conservation, purification of air and water, nutrient recycling, maintenance of biological diversity, mitigation of climate change, carbon sequestration.*
[80] *Employment and income, recreation, protection of natural and cultural heritage.*
[81] *Industrial wood, fuel wood, non-wood forest products such as fibre, food, medicine.*
[82] *Play an important role in the global carbon cycle.*
[83] *UNEP, 2002.*
[84] *Compared to -0.37% (Central Africa), -0.87% (Eastern Africa), -1.22% (Northern Africa), -0.7% (Southern Africa).*
[85] *The killing of wild animals, often endangered species such as gorillas, chimpanzees, monkeys, okapi, elephant, etc., for their meat.*
[86] *Overall, approximately 5% of the land area of Western Africa has been designated as protected (for a total of 29 million hectares).*

4.6.4 Water

In Africa the distribution of surface water and groundwater is uneven and spatial distribution of water resources does not coincide with the population densities. Groundwater is a major source of water, contributing 15% of Africa's resources[87], and is used for domestic and agricultural consumption in many areas, particularly the more arid sub-regions. Areas dependent on groundwater reserves are also at risk of water shortages, as water is extracted far more rapidly than it is recharged. The major factors influencing water availability include growing domestic consumption for drinking water and sanitation, irrigated agriculture and industrialization[88].

Little attention has been paid to water quality problems. Pollution[89] degrades and poisons the ecosystems and threatens the health and livelihood of people who depend on them. Freshwater and groundwater pollution is a growing concern in many areas, further limiting access to safe water. Poor water quality leads not only to diseases but also reduces agricultural production. Poor water quality also limits economic development options, such as water-intensive industries and tourism. As a palliative measure, many countries have established/enforced effluent water standards and rehabilitated wastewater treatment facilities.

4.6.4 Coastal areas

Africa's coastlines are characterized by a diversity of ecosystems and an abundance of natural resources. Coastal and marine habitats are being eroded and degraded through unsustainable rates of resource extraction. A growing population and its demands on these resources is causing degradation and pollution. In Western Africa, about one third of the total population is concentrated on a 60-kilometre wide coastal band between Senegal and Cameroon and large-scale urban growth has occurred from Accra to the Niger Delta, an environmentally sensitive portion of the African coastline.

Other activities such as damming of rivers, increased use of fertilizers and clearing of natural vegetation also affect the coastal zone. Population growth, people migrating to the coast, and rapidly expanding tourism and industrial activities through the promotion of high rates of infrastructure development all contribute to changing the physical and ecological environment of the coastal zone. Lack of official protection, sustainable development policies and insufficient resources to implement coastal and marine management have contributed to the pressures.

The demand for fisheries resources is also increasing and fisheries have developed significantly in the last 30 years. Fisheries contribute more than 5% to the GDP in Ghana, Mali, Mauritania and Senegal. The Sustainable Fisheries Livelihoods Programme in Western Africa seeks to develop social and human capital in fisheries-dependent communities whilst at the same time enhancing natural habitats in those communities.

The washing into rivers of fertilizer and pesticide residues is prevalent in Western Africa around cities such as Lagos, Abidjan, Conakry and Dakar. Contaminated fish can severely reduce economic returns, and swimming in contaminated waters or eating contaminated food may also expose people to infections. Domestic solid and liquid waste is also a source of marine and coastal pollution, as municipalities frequently do not have the capacity to deal with the large volumes of waste produced. Solid waste is often dumped on beaches from where it can be blown or washed out to sea.

National initiatives relating to marine and coastal pollution have included public health legislation and municipal cleaning of coastal areas. International initiatives include the Convention for the Prevention of Pollution from Ships and the Convention for Cooperation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region. Difficulties have been faced in

[87] *Lake and Souré,1997.*
[88] *Also source of pollution and affecting water quality.*
[89] *Sources include untreated sewage, chemical discharges, petroleum leaks/spills, dumping in old mines and pits and agricultural chemicals.*

monitoring and enforcement, mainly because of the size of the territories and the lack of efficient surveillance systems[90].

4.6.5 Urban areas

The majority of the Western African population is still rural, but urban growth rates are the most rapid in the world. West Africa is the second most urbanized sub-region with an average urban population of 40%[91]. The high urban growth rate (4% a year) is a result of rural-urban migration, population growth and conflict (for some areas). People leave rural areas because of declining agricultural productivity, and lack of employment and access to basic infrastructure. Environmental disasters and conflicts have also caused many people to seek refuge in urban centres.

Infrastructure development has been unable to keep pace with the growing urban populations' need for services. As a result, many cities have an increasing number of overcrowded settlements characterized by inadequate housing and poor provision of infrastructure (roads, street lights, water supplies, sanitation and waste management services). In addition, new settlements have mostly been on the urban periphery thus requiring expansion of infrastructure rather than more intensive use of existing networks.

So the key environmental issues in urban areas in Africa are related to the provision of services for waste, water and sanitation, as well as urban air pollution[92]. Clearly, the volume of solid waste generated in urban areas is increasing and the rates of waste generation are outstripping the capacities of local authorities to collect, treat and dispose of the waste[93]. Inadequate urban infrastructure leads to untreated waste and waste remaining uncollected or improperly disposed of. Burning of solid waste is common, but the toxic fumes released contribute to air pollution.

4.6.6 Atmosphere

The African continent is climatically diverse with humid tropical conditions prevailing in Western and Central Africa. The region is subject to a high degree of variability and uncertainty in climatic conditions. Climate variability is therefore the single most important atmospheric phenomenon in Africa. In comparison to other regions, African countries emit negligible amounts of air pollutants and anthropogenic greenhouse gases.

In some parts of Africa and in some large cities, the incidence of respiratory disease is increasing, reflecting deterioration in the quality of the air. The main causes are the indoor burning of coal, wood, kerosene (paraffin) and vehicular and industrial emissions. Many countries have prepared National Environmental Action Plans or National Strategies for Sustainable Development that address the sources and impacts of atmospheric pollution[94].

4.6.7 Disasters

Flooding and drought, which can result in malnutrition and famine, are common in Africa, whilst geophysical events (earthquakes) take place mainly in Northern Africa. The impacts of such disasters include loss of lives and livelihoods, damage to infrastructure, interruption of economic activities, and increased risk of epidemics. Such disasters can also have severe economic impacts and may have a sizeable impact on economic development. Inadequate infrastructure and lack of economic security to provide for

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[90] *Other initiatives have had more success such as the GEF's US$ 6 million Industrial Water Pollution Control in the Gulf of Guinea, which has been determinant in the adoption of the Accra Declaration (regional policy for long-term sustainable development).*
[91] *United Nations Population Division, 2001.*
[92] *For example 29% of the urban population in Guinea-Bissau and 31% in Chad had access to improved water sources in 2000. WHO and UNICEF, 2000.*
[93] *In Africa 31% of solid wastes in urban areas are collected and only 2% of waste is recovered and recycled due to lack of economic incentives and markets for recycled materials. UNCHS, 2001.*
[94] *For example, Ghana has introduced legislation making Environmental Impact Assessments compulsory for developments such as roads, mines and industrial operations with potentially high atmospheric emissions.*

hard times also compromise people's capabilities to cope with such disasters and therefore amplify the impacts.

The increasing frequency and severity of climatic variability can be partially attributed to human activities such as deforestation and inappropriate management of land and water resources. The clearing of tropical forests in Central and Western Africa has altered the local climate and rainfall patterns and increased the risk of droughts. Clearing of vegetation may also increase floods and soil erosion. Damming of rivers, draining/degradation of wetlands, deforestation and overgrazing reduce the environment's natural ability to absorb excess water, enhancing the impacts of floods.

In the last 30 years, Africans have sought refuge from natural and human-caused disasters with both environmental and socio-economic impacts. Often refugees[95] are established in fragile ecosystems where they exert considerable pressure on natural resources since they have no other means of survival. Refugees may also experience further conflicts with neighbouring communities due to competition for resources.

Disaster responses have tended to focus on national and sub-regional levels and concerted regional efforts for disaster management do not exist. There is also a tendency to react rather than prevent by improving and enhancing environmental management and agricultural practices. However, there have been some prevention successes, for example famine resulting from drought, such as the Famine Early Warning System project, the implementation of a new efficient seed distribution system in Niger and promotion of more drought-resistant crop varieties.

In some parts of West Africa, long-term measures such as urban planning regulations prohibiting developments along watercourses have been promulgated, although resource constraints often prevent them from being strictly enforced.

With global warming, the incidence of drought is likely to increase in many parts of Africa. The frequency and intensity of cyclones and floods in some areas are also likely to increase, adding to the stresses on water and food security and possibly contributing to epidemics[96].

4.7 Relationship between environmental status and poverty in West African countries

Some work has been done on population-poverty-environment linkages. A second area of research is the use of mapping tools for a better understanding of poverty-environment linkages. A third instrument analysed is the PRS, where environmental aspects are analysed in relation to poverty reduction.

4.7.1 The population – poverty – environment spiral

Poverty is endemic in many areas of Africa and the rapidly growing population continues to rely on natural resources and agriculture for much of its economic productivity and for the provision of basic human needs. These conditions leave the region highly vulnerable to the adverse impacts of environmental changes. Population dynamics, poverty and environmental change are linked in many ways and through multiple social and economic mechanisms at various geographic levels.

Growing populations, economic development and changes in climate contribute to increasing the risk of land degradation in Africa. Important areas of land are brought under agriculture in order to meet the demands of the increasing population. Inequitable land distribution, poor farming methods, unfavourable land tenure systems and inefficient irrigation systems lead to declining productivity of grazing and agricultural lands. Also, concentration of a large number of people in fragile areas further contributes to land degradation and severe soil erosion. Better quality agricultural land is taken over for commodity and cash

[95] *At the end of 2000, there were 3.6 million refugees in Africa. UNHCR, 2001.*
[96] *IPCC, 2001.*

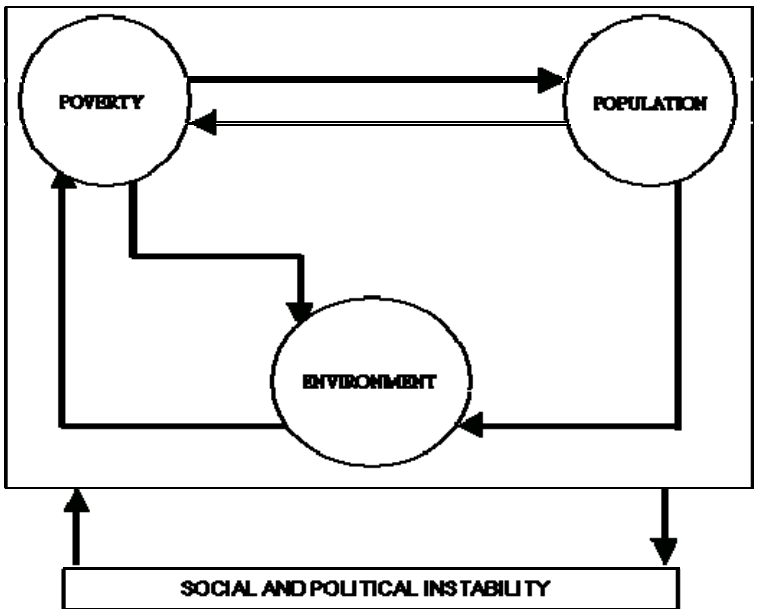
crop production. The environment suffers as a result since soils are mined and the use of fertilizers and pesticides becomes more extensive. Water resources and aquatic ecosystems are particularly damaged.

Much of the increased demand for food is met through converting forests to cropland. This is reflected in the loss of total forest area and increased exploitation of remaining forests. In some areas, forest resources are overexploited for the export market. Furthermore, poverty leads to overexploitation of the remaining natural forest resources for fuel, food, medicines and shelter.

An increasing area of research and action is the theme of migration. Conflicts lead to migration within and out of the Western African region, which in turn affects the natural resources.

Figure 4.2 The population-poverty-environment spiral

The population-poverty-environment spiral



Source: Marcoux, 1999.

How poverty affects population:

- high child death rates lead parents to compensate by having more children
- lack of water supply, fuel and labour-saving devices require children to help in fields and homes
- lack of security (illness and old age) increases the need for numerous children
- lack of education means less knowledge of family planning methods and benefits
- lack of confidence in future and control over circumstances does not encourage family planning
- low status of women means women are often uneducated, without power to control fertility.

How population affects poverty:

- unemployment, low wages for those in work, dilution of economic gain
- increasing landlessness - inherited plots divided among many children

- overstretching of social, water and sanitation services, schools, health and family planning centres.

How poverty affects the environment:

- difficulty in fulfilling today's needs: short-term exploitation has priority over long-term protection
- lack of knowledge about environmental issues and long-term consequences of current actions.

How environment affects poverty:

- soil erosion, salinization, and flooding cause declining yields, declining employment and incomes
- poor housing, poor services and overcrowding exacerbate disease problems and lower productivity.

How population affects the environment:

- increasing pressure on marginal lands, over-exploitation of soils, overgrazing, over cutting of wood
- soil erosion, silting, flooding
- increased use of pesticides, fertilizer, water for irrigation – increased salinization, pollution of fisheries
- migration to overcrowded slums, problems of water supply and sanitation, industrial waste dangers, indoor air pollution, mud slides.

4.7.2 Poverty-environment mapping

The use of maps to understand poverty-environment linkages is currently being analysed in different projects. The maps tool proves to be useful in analysing the linkages and could also be used to explore land tenure aspects.

Box 4.1 Trying to understand land degradation and its relation to poverty: the poverty-environment mapping project in Western Africa

A pilot study in Western Africa aims to examine the relationship between the location of rural poor populations and land use potential, based on 'best available data', using Geographic Information Systems Technology.

- *Biophysical data: Agroclimatic Zones, Land Degradation*
- *Socio-economic data: Population Density, Accessibility to Infrastructure and Roads (only for Burkina Faso and Mali).*

The interpretation is difficult. As far as agro-climatic zones are concerned, there seems to be a certain degree of correlation of the HDI indicators with aridity (Child Mortality, Adult Literacy and School Enrolment). As far as the correlation of HDI and land degradation is concerned the HDI is better in very highly degraded land, which is often located around the cities. More precise data have to be used. The project concludes, at this stage, that a deeper look at land degradation will be necessary.*

**Human Development Index.*

Source: GRID Arendal (UNEP/CGIAR research).

4.7.3 The environment in the Poverty Reduction Strategy Papers

An analysis of the PRSPs of Western Africa can help to understand the approaches that are promoted to strengthen environmental protection and poverty reduction. PRSPs are the main frame for coordinating action to reduce poverty and achieve sustainable development at country level. It is considered a key process in coordinating efforts to achieve the sustainable development goals in a participatory manner.

Generally speaking, almost every PRSP of the Western African countries mentions the environment as a determinant for poverty reduction or poverty as a factor leading to environmental degradation. Nevertheless, the reference to environmental aspects is still very brief. A majority of references to the environment in the PRSPs also raise the issue of employment and job creation in this context.

There are some major observations to be made about the PRSPs:

- reference to a legal frame or a specific programme or strategy is not always given; the existence of a clear legal basis and strategy document might clarify work in the environment and conservation area
- some PRSPs make comprehensive assessments of the poverty-environment linkages but are weak on drafting concrete lines of action and possible actions
- some PRSPs are clearly focussed on the main environmental issues, such as access to land in Burkina Faso and Senegal.

Table 4.3 References to the environment in the PRSPs

Country	Completion date of current PRSP	Reference to national legal instruments, strategies or concepts	Main thematic focus
Benin	December 2002	Programme National de Gestion de l'Environnement.	
Burkina Faso	May 2002		Chapter on the "Gestion Durable des Ressources Naturelles". Access to land as an important issue.
Cameroon	August 2003	Natural Resources and Protection Programme. Forestry and Environment Sectoral Programme.	
Chad	June 2003		Ecosystem management in the frame of an integrated rural development: the integrated rural development will enhance integration of social, economic and environmental factors.
Ghana	February 2003		Natural and built environments. Environmental protection and NRM.
Guinea	January 2002		NRM and environment protection.
Mali	May 2002	Law on pollution and nuisances of 2001 with decrees in the field of waste management, noise control and air pollution control.	
Niger	January 2002		Priority action on desertification control. One of the objectives is the creation of new protected areas for the period 2002-2004.
Senegal	May 2002	Participatory processes for Land Occupation Plans (Plans d'Aménagement et d'Occupation des Sols) with the objective of improving the management of protected areas and mitigating human pressure.	Chapter on the "Natural capital and quality of life". Guiding principle of rational NRM with a view to sustainable development (10th Economic and Social Development Plan 2002-2007.
The Gambia	April 2002		Analysis of environmental situation, with mention of the special concern for settlement in coastal areas and waste management. No action foreseen.
Guinea Bissau	September 2000	Action Plan for the Implementation of the Land Law.	Access of small farmers to land.
Mauritania	March 2002		Rural development is a priority area of the PRSP, including food security and environment (renewable energy, development of pasture systems).

4.8 Current key processes in Africa

4.8.1 NEPAD

NEPAD focuses on a series of priorities that are conducive to poverty alleviation, such as peace, agricultural development, basic infrastructures and the environment. Donor support is increasingly based on the priorities and achievements in the frame of the NEPAD. The Environment Action Plan for the First Decade of the 21st Century also considers the importance of GEF[97] support for the global environment in Africa.

Box 4.2 Action Plan of the Environment Initiative of the NEPAD, June 2003

Programme areas and activities:

- *Programme Area 1 Combating land degradation, drought and desertification*
- *Programme Area 2: Conserving Africa's wetlands*
- *Programme Area 3: Prevention, control and management of invasive alien species*
- *Programme Area 4: Conservation of marine, coastal and freshwater resources*
- *Programme Area 5: Combating climate change in Africa*

4.8.2 Land reforms

At the policy level in Western Africa it is worth underlining that there is a process of analysis and exchange among local farmers' organizations on land tenure schemes, e.g. schemes for transmission and exploitation of land and natural resources. Many countries are in the process of defining or implementing land reforms (Senegal, Guinea, Niger). In this context, OXFAM[98] is currently launching an initiative to mobilise national farmers' organizations in a debate on land tenure[99]. The process will take place in each country and will be monitored by the ROPPA. The objective is to initiate a reform process that will achieve economic development and social justice. In Senegal for instance, this process has already been launched by the Presidency in the frame of the Orientation Law on Agriculture and there is an official declaration by the rural organizations on land reform[100].

There seems to be a need for an exchange of experience and views on land tenure schemes and decentralisation processes. There is a potential to increase the sharing of knowledge on these issues at the regional or even international level.

4.8.3 Regional cooperation in research

There is a range of organizations in Western Africa that are active in different countries of the region on poverty and ecosystems interrelations. This frame can be an opportunity to increase regional learning and

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[97] *Global Environment Facility (GEF), established in 1991, helps developing countries fund projects and programs that protect the global environment. Grants support projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants.*

[98] *OXFAM is an international confederation, comprised of 12 independent NGOs dedicated to fighting poverty and related injustice around the world.*

[99] *Programme Accès Foncier en Afrique de l'Ouest: Proposition d'une démarche de réflexion – Action pour une réforme foncière, Note prepared by Jacques Faye, March 2004.*

[100] *Séminaire national des ruraux sur la réforme foncière, Déclaration finale, 12-15 Janvier 2004.*

knowledge sharing on poverty and the environment. In particular, concerted research and implementation still have to be strengthened.

4.9 Key initiatives and organizations

Some organizations active in Western Africa are briefly presented in Table 4.4. According to a selection of criteria, an overview of possible areas of work on poverty-environment in Western Africa is presented in Table 4.5.

Remarks on the selection of criteria:

- there are opportunities to define new thematic issues (e.g. food security) or to strengthen research on some issues (e.g. land tenure) in order to acquire better knowledge on poverty-environment linkages
- there are possibilities to develop the interactions with international or regional organizations, especially for policy work
- there are opportunities to develop regional approaches through closer collaboration with a regional organization
- working on poverty-environment linkages might imply working more closely with indigenous associations and local organizations
- exploring aspects of indigenous knowledge and gender in relation to poverty-environment linkages; the topic of living conditions of pastoralists is still an area of research.

Table 4.4 Short presentation of selected organizations active in Western Africa

Type of organization	Name of organization	Location	Description
International research programmes through CGIAR centres	Africa Rice Centre (WARDA)	Cote d'Ivoire	Research mainly focused on food security of the poor farmer families and on agricultural research.
	International Centre for Agricultural Research in the Dry Areas (ICARDA)	Damascus	ICARDA in Algeria, Morocco, Mauritania, Libya, Tunisia is working on poverty reduction and sustainable resource management: Improving the Livelihoods of Rural Communities and Natural Resource Management in the Mountains of the Maghreb Countries, decision-making tools for sustainable management of the agro-pastoral production base empowerment of local communities (support for coping strategies).
UN agency	Food and Agriculture Organization (FAO) Institut d'Economie Rurale	Mali	FAO is active on poverty and environment through a project (Evolution des systèmes agricoles vers l'agriculture et le développement rural durables (ADRD-ESA)). The project studies the ways of contributing to the mid-term plan and strategic frame of the FAO that comprises reduction of food insecurity and rural poverty. In Mali, there is on-going research on combined systems of production cereals/tubers in Western Africa in order to combat ecosystem destruction and socio-cultural changes by mono-cultural activities.
	Sahel and Sahara Observatory (OSS)	Tunisia	A platform on partnerships to combat desertification between African and European countries, regional and international organizations, and representatives of civil society.
UN, EU or national organizations (FAO, EU, GTZ, SDC)	Livestock, Environment and Development (LEAD)		The objective of the initiative is to protect and reinforce the natural resources that are affected by livestock in order to reduce poverty. The Virtual Centre for the Research on Livestock-Environment Linkages has been created with the aim of improving communication and research in this field.
Research and training centre	Centre Régional pour l'Eau Potable et l'Assainissement à Faible Coût (CREPA)	Burkina Faso	Work on water and sanitation as an inter-governmental organization between 15 countries in Western and Central Africa. The strategy of the CREPA is to adapt technologies, participatory processes, endogenous finances.
	Institut Rural d'Education Civique (IREC)		Research on the rights of access to land and natural resource in Western Africa, co-funded by the French and British governments.
	Inter-state Group of Schools EIER-ESTHER	Burkina-Faso	A group of schools including the Rural Equipment Engineering School (EIER) and the School for Higher Technicians of Water and Rural Equipment (ESTHER). The training is targeted on leaders for Western Africa. The schools cooperate with several bilateral donors on the environment. Thematic areas are water and sanitation, energy, water for food and people.
Research centre	Institut Africain de Gestion Urbaine (IAGU)	Senegal	Training on environmental planning and management (EPM), environmental auditing, planning and environmental management; urban waste management; empowerment for Western African leaders (self-esteem strengths, resourcefulness, action, responsibility - SARAR) and training for local politicians. The institute looks more closely at the illegal trafficking of dangerous waste and the pollution of protected areas by dangerous waste, as it hosts the regional training of the Basel Convention for French-speaking Western African countries.

	Centre Suisse de Recherches Scientifiques	Côte d'Ivoire	Food security is also a main preoccupation (especially research on igname, manioc and maize). In food security there are three main areas of research: (1) research involving the EU and Switzerland on post-harvest and commercialisation and consumption in urban Western African markets of igname for the whole Western Africa; (2) cooperation with private sector companies such as Nestlé on new varieties; (3) research on the agricultural intensification through market approaches and building of dams. This third area intends to work on the linkages between agriculture and health, aiming at poverty reduction in rural areas and reduction of the vulnerability of the poor.
	Centre pour l'Environnement et le Développement en Afrique (CEDA)	Benin	International African Association working on environment and local development. The aim is to promote participatory processes for sustainable development. Working tools are education, advice and publications.
Local association	Fédération nationale des groupements NAAM (FNGN)	Burkina Faso	One of the biggest farmers' organizations in Western Africa. The NGO carries out some activities in NRM and organizational, economical and technical capacity building based on local traditions. Currently it works with 4,700 farmers groups and 1,170 municipalities, a majority of members being women.
	Association pour la Promotion de l'Elevage en Savanne et au Sahel (APESS)	Burkina Faso	Organization of traditional stockbreeders of the Sudano-Sahelian strip that stretches from the Atlantic Ocean to the Red Sea. Member herders of APESS have embarked upon an innovating movement that seeks to make traditional stockbreeding the driving force of the social, cultural and economic development of the sub-region.
	Fédération Paysanne Mooriben	Niger	A federation composed of 15 organizations with more than 15,000 members. The federation cooperates on NRM and food security among others with local NGOs, customary local authorities, and Catholic Relief Services (CRS).
National association	Comité National de Concertation des Ruraux (CNCR)	Senegal	The CNCR is in charge of the land tenure reform in Senegal.
Association	ROPPA	Senegal	Promotion of pro-poor farming in the frame of the NEPAD.

Table 4.6 Overview of possible areas for knowledge sharing in Western Africa

Criteria	Line of action	Organizations	Possible areas for knowledge sharing
Thematic issue	Food security	WARDA, FAO, ITTA (International Institute of Tropical Agriculture)	Regular exchange on possible policy conclusions of work.
	Empowerment: land tenure and decentralisation	IIED	Exchange based on land use schemes, decentralisation and gender, based on this field research, e.g. on the following topics: - Impact of pastoral laws on a fair and sustainable management of natural resources in Guinea[101] - Decentralisation in Mali[102] - Land pressure and new forms of access to land in Niger, a study on mechanisms of exclusion of women from access to land[103].
	Creating pro-poor, pro-environment markets	Centre Suisse de Recherche Scientifique	Markets for local products and vulnerability of farming families, with specific considerations of gender issues.
	Poverty-environment mapping	OSS	Possibity of sharing specific knowledge on the long-term evolution of ecosystems and interrelations between ecological and socio-economic systems in a poverty reduction perspective. The "Réseaux d'Observatoires de Surveillance Ecologique à Long Terme – ROSELT" in Northern Africa could provide a platform of cooperation with IUCN on poverty-environment mapping. The cooperation could focus explicitly on social aspects and gender issues.
	Poverty-environment mapping	GRID Arendal	UNEP – CGIAR Project on the "Generation of reliable statistical and cartographic products to communicate the relationship between rural poverty and land use potential in West Africa, in order to provide information to ensure optimal use of research investment".
	Trade and the environment	International Centre for Trade and Sustainable Development (ICTSD), Geneva	Specific research on trade issues in Western Africa (cotton, sustainable agriculture); project on participatory policy dialogue in Western Africa and capacity building in the field of trade policies (project supported by SDC).
Impact on policy debate at international level	Poverty in rural areas	IFAD (International Fund for Agricultural Development)	Source of data and knowledge on poverty features in Western Africa.
Relevance of research for poverty-environment		ICARDA OSS	Research exchange on poverty-environment patterns.
Rural-urban interrelations		IAGU	Undertake local analysis of poverty-environment linkages especially in the health sector.
Regional approaches		RAPPO	Networking with grassroot organizations.
Local and grassroot initiatives combining		FNGN & APESS	Establish links through donors and define poverty-environment areas of learning and implementation.

[101] *(Dossier N°126, March 04)*
[102] *(Dossier N° 127, March 2004)*
[103] *(Dossier N° 128, March 2004)*

development and conservation		Burkina Faso	
Important political processes	Land tenure reforms	CNCR Senegal	Work on land tenure reform programme through selected donors (project of agricultural orientation law based on proposals coming from agricultural associations), process of elaboration of a land tenure action plan.
	Decentralisation	CNCR, Senegal FNGN, Burkina Faso	Decentralisation as a line of action for reinforcing poverty-environment linkages together with local associations.
Indigenous knowledge		SDC Niger	Specific work on pastoralists at the SDC local office in Niger (implementation for a complementary law to the ordinance on the rural code).
Possibility to take into account gender aspects		Centre Suisse de Recherche Scientifique	Specific research that might be interesting for IUCN is on the role of women's associations in vulnerability.

4.10 Conclusion: specific recommendations

Globally, since the mid-1990s, increasing attention has been drawn on poverty in Africa. The World Food Summit in 1996 set the target of halving poverty by 2015.

NEPAD[104] indeed gives due place to environmental protection for the whole continent as a means to combat poverty. NEPAD has provided a momentum for sustainable development in Africa and has also enhanced donor mobilisation for poverty reduction on the continent. In line with this global process, local initiatives have developed in order to shape a pro-poor, pro-environment pathway. New schemes for tackling land use are developed and applied and new approaches are defined and implemented in order to sustain the opportunities, security, power and capability of the poor. There are still opportunities to work more on the issue of land tenure in order to exchange experiences. Key international research organizations such as WWF or IIED are interested in this issue.

In order to increase knowledge on poverty-environment linkages, there is a need to work at different levels. On the one hand, there are organizations, e.g. ICARDA, OSS, that offer opportunities to work at the regional level to promote the regional policy dialogue and to strengthen coordinated approaches and solutions. On the other hand, there is a potential that research and conservation organizations work more with grassroot organizations such as farmers' organizations in different countries. Farmers' organizations are very much involved in decentralisation processes and represent key groups in rural areas.

[104] *NEPAD is designed to address the current challenges facing the African continent, such as the escalating poverty levels, underdevelopment and the continued marginalization of Africa. Its objectives are to eradicate poverty, place African countries on a path of sustainable growth and development, halt the marginalization of Africa in the globalization process and enhance its full and beneficial integration into the global economy, accelerate the empowerment of women.*

Annex 4A: Benin Data Profile

	1999	2002	2003
People			
Population, total (mio)	6.1	6.6	6.7
Population growth (annual %)	2.6	2.6	2.5
Life expectancy (years)	..	52.7	..
Fertility rate (births per woman)	..	5.3	..
Infant mortality rate (per 1,000 live births)	..	93.0	..
Under 5 mortality rate (per 1,000 children)	..	151.0	..
Child immunization, measles (% of under 12 months)	75.0	78.0	..
Literacy total (% of ages 15 and above)	36.3	39.8	..
Literacy female (% of ages 15 and above)	22.7	25.5	..
Net primary enrolment (% relevant age group)	71.3	..	..
Net secondary enrolment (% relevant age group)	17.5	..	..
Environment			
Surface area (sq. km) (thousand)	112.6	112.6	..
Freshwater resources per capita (cubic meters)	..	3,937.7	..
CO2 emissions (metric tons per capita)	0.2	..	..
Energy use per capita (kg of oil equivalent)	313.5	..	..
Electricity use per capita (kWh)	56.9	..	..
Economy			
GNI, Atlas method (current US$)	2.3 bn	2.5 bn	3.0 bn
GNI per capita, Atlas method (current US$)	390.0	380.0	440.0
GDP (current $)	2.4 bn	2.7 bn	3.5 bn
GDP growth (annual %)	4.7	6.0	5.6
GDP implicit price deflator (annual % growth)	1.9	1.9	2.5
Value added in agriculture (% of GDP)	37.8	36.0	35.7
Value added in industry (% of GDP)	13.7	14.3	14.3
Value added in services (% of GDP)	48.5	49.7	50.0
Exports of goods and services (% of GDP)	16.1	14.3	14.5
Imports of goods and services (% of GDP)	28.8	26.1	26.2
Gross capital formation (% of GDP)	17.5	17.8	18.9
Trade and finance			
Trade in goods as a share of GDP (%)	48.8	37.8	..
Trade in goods as a share of goods GDP (%)	94.7	65.1	..
Net barter terms of trade (1995=100)	87.0	..	..
Foreign direct investment, net inflows in reporting country (current US$)	39.3 mio	41.0 mio	..
Present value of debt (current US$)	..	873.3 mio	..
Total debt service (% of exports of goods and services)	10.1	9.6	..
Short-term debt outstanding (current US$)	121.8 mio	80.4 mio	..
Aid per capita (current US$)	34.8	33.6	..
Source: *World Development Indicators database*, August 2004			

Annex 4B: Burkina Faso Data Profile

	1999	2002	2003
People			
Population, total (mio)	11.0	11.8	12.1
Population growth (annual %)	2.4	2.4	2.3
Life expectancy (years)	44.9	42.9	..
Fertility rate (births per woman)	..	6.3	..
Infant mortality rate (per 1,000 live births)	..	107.0	..
Under 5 mortality rate (per 1,000 children)	..	207.0	..
Births attended by skilled health staff (% of total)	31.0	..	..
Child malnutrition, weight for age (% of under 5)	34.3	..	..
Child immunization, measles (% of under 12 months)	46.0	46.0	..
Primary completion rate, total (% age group)	..	29.3	..
Primary completion rate, female (% age group)	..	24.5	..
Net primary enrolment (% relevant age group)	34.3	..	..
Net secondary enrolment (% relevant age group)	8.4	..	..
Environment			
Surface area (sq. km) (thousand)	274.0	274.0	..
Freshwater resources per capita (cubic meters)	..	1,225.6	..
CO2 emissions (metric tons per capita)	0.1	..	..
Economy			
GNI, Atlas method (current US$)	2.8 bn	3.0 bn	3.6 bn
GNI per capita, Atlas method (current US$)	260.0	250.0	300.0
GDP (current $)	2.8 bn	3.2 bn	4.2 bn
GDP growth (annual %)	6.7	4.4	6.5
GDP implicit price deflator (annual % growth)	-1.6	3.7	2.2
Value added in agriculture (% of GDP)	35.5	31.0	31.0
Value added in industry (% of GDP)	16.9	18.0	18.9
Value added in services (% of GDP)	47.6	50.9	50.1
Exports of goods and services (% of GDP)	10.2	8.5	8.5
Imports of goods and services (% of GDP)	25.9	21.6	23.4
Gross capital formation (% of GDP)	23.8	17.8	18.7
Trade and finance			
Trade in goods as a share of GDP (%)	27.9	23.8	..
Trade in goods as a share of goods GDP (%)	50.7	46.4	..
Net barter terms of trade (1995=100)	86.0	..	..
Foreign direct investment, net inflows in reporting country (current US$)	13.1 mio	8.2 mio	..
Present value of debt (current US$)	..	463.0 mio	..
Total debt service (% of exports of goods and services)	..	16.0	..
Short-term debt outstanding (current US$)	103.4 mio	54.5 mio	..
Aid per capita (current US$)	36.2	40.0	..
Source: *World Development Indicators database*, August 2004			

Annex 4C: Cameroon Data Profile

	1999	2002	2003
People			
Population, total (mio)	14.8	15.8	16.1
Population growth (annual %)	2.3	2.1	2.0
Life expectancy (years)	50.9	48.4	..
Fertility rate (births per woman)	..	4.6	..
Infant mortality rate (per 1,000 live births)	..	95.0	..
Under 5 mortality rate (per 1,000 children)	..	166.0	..
Child immunization, measles (% of under 12 months)	62.0	62.0	..
Literacy total (% of ages 15 and above)	70.0	..	..
Literacy female (% of ages 15 and above)	62.2	..	..
Primary completion rate, total (% age group)	42.5	..	..
Primary completion rate, female (% age group)	39.0	..	..
Environment			
Surface area (sq. km) (thousand)	475.4	475.4	..
Freshwater resources per capita (cubic meters)	..	17,312.5	..
CO2 emissions (metric tons per capita)	0.6	..	..
Energy use per capita (kg of oil equivalent)	412.8	..	..
Electricity use per capita (kWh)	181.4	..	..
Economy			
GNI, Atlas method (current US$)	8.8 bn	8.8 bn	10.3 bn
GNI per capita, Atlas method (current US$)	600.0	570.0	640.0
GDP (current $)	9.2 bn	9.9 bn	12.4 bn
GDP growth (annual %)	4.4	4.2	4.2
GDP implicit price deflator (annual % growth)	-1.2	4.3	1.1
Value added in agriculture (% of GDP)	43.5	44.2	44.5
Value added in industry (% of GDP)	20.3	19.1	18.9
Value added in services (% of GDP)	36.2	36.7	36.5
Exports of goods and services (% of GDP)	24.4	27.4	24.6
Imports of goods and services (% of GDP)	24.7	28.9	25.4
Gross capital formation (% of GDP)	18.7	18.3	17.3
Current revenue, excluding grants (% of GDP)	16.0	..	..
Overall budget balance, including grants (% of GDP)	0.1	..	..
Trade and finance			
Trade in goods as a share of GDP (%)	31.1	38.6	..
Net barter terms of trade (1995=100)	78.0	..	..
Foreign direct investment, net inflows in reporting country (current US$)	40.0 mio	86.2 mio	..
Present value of debt (current US$)	..	4.8 bn	..
Short-term debt outstanding (current US$)	1.3 bn	778.1 mio	..
Aid per capita (current US$)	29.4	40.1	..
***Source: World Development Indicators database*, August 2004**			

Annex 4D: Cape Verde Data Profile

	1999	2002	2003
People			
Population, total (thousand)	423.0	458.0	470.0
Population growth (annual %)	2.6	2.7	2.6
Life expectancy (years)	..	69.1	..
Fertility rate (births per woman)	..	3.5	..
Infant mortality rate (per 1,000 live births)	..	29.0	..
Under 5 mortality rate (per 1,000 children)	..	38.0	..
Child immunization, measles (% of under 12 months)	61.0	85.0	..
Literacy total (% of ages 15 and above)	72.9	75.7	..
Literacy female (% of ages 15 and above)	64.9	68.0	..
Net primary enrolment (% relevant age group)	99.7	..	..
Environment			
Surface area (sq. km)	4,030.0	4,030.0	..
Freshwater resources per capita (cubic meters)	..	655.0	..
CO2 emissions (metric tons per capita)	0.3	..	..
Economy			
GNI, Atlas method (current US$)	568.3 mio	588.5 mio	700.8 mio
GNI per capita, Atlas method (current US$)	1,340.0	1,280.0	1,490.0
GDP (current $)	583.4 mio	643.5 mio	831.1 mio
GDP growth (annual %)	8.6	4.3	5.0
GDP implicit price deflator (annual % growth)	5.0	2.5	2.6
Value added in agriculture (% of GDP)	11.8	10.7	6.6
Value added in industry (% of GDP)	18.4	16.4	18.9
Value added in services (% of GDP)	69.8	72.8	74.5
Exports of goods and services (% of GDP)	19.3	30.1	30.7
Imports of goods and services (% of GDP)	57.8	65.1	65.4
Gross capital formation (% of GDP)	20.9	20.0	19.4
Trade and finance			
Trade in goods as a share of GDP (%)	46.8	45.4	..
Trade in goods as a share of goods GDP (%)	154.8	160.2	..
Net barter terms of trade (1995=100)	100.0	..	..
Foreign direct investment, net inflows in reporting country (current US$)	53.3 mio	14.8 mio	..
Present value of debt (current US$)	..	265.0 mio	..
Total debt service (% of exports of goods and services)	9.5	7.6	..
Short-term debt outstanding (current US$)	19.4 mio	25.2 mio	..
Aid per capita (current US$)	323.2	201.3	..
Source: *World Development Indicators database*, August 2004			

Annex 4E: Chad Data Profile

	1999	2002	2003
People			
Population, total (mio)	7.6	8.3	8.6
Population growth (annual %)	3.1	2.9	2.8
Life expectancy (years)	..	48.4	..
Fertility rate (births per woman)	..	6.2	..
Infant mortality rate (per 1,000 live births)	..	117.0	..
Under 5 mortality rate (per 1,000 children)	..	200.0	..
Child immunization, measles (% of under 12 months)	30.0	55.0	..
Literacy total (% of ages 15 and above)	41.0	45.8	..
Literacy female (% of ages 15 and above)	32.3	37.5	..
Net primary enrolment (% relevant age group)	56.7	..	..
Net secondary enrolment (% relevant age group)	7.8	..	..
Environment			
Surface area (sq. km)	1.3 mio	1.3 mio	..
Freshwater resources per capita (cubic meters)	..	5,155.3	..
Economy			
GNI, Atlas method (current US$)	1.6 bn	1.8 bn	2.1 bn
GNI per capita, Atlas method (current US$)	210.0	220.0	250.0
GDP (current $)	1.5 bn	2.0 bn	2.6 bn
GDP growth (annual %)	-0.6	9.9	9.9
GDP implicit price deflator (annual % growth)	-7.6	3.7	0.5
Value added in agriculture (% of GDP)	38.0	38.0	37.7
Value added in industry (% of GDP)	14.4	16.8	16.7
Value added in services (% of GDP)	47.6	45.1	45.6
Exports of goods and services (% of GDP)	15.8	12.2	21.2
Imports of goods and services (% of GDP)	30.4	64.7	53.8
Gross capital formation (% of GDP)	10.1	58.9	44.7
Trade and finance			
Trade in goods as a share of GDP (%)	33.8	48.0	..
Trade in goods as a share of goods GDP (%)	63.9	84.7	..
Net barter terms of trade (1995=100)	83.0	..	..
Foreign direct investment, net inflows in reporting country (current US$)	26.6 mio	900.7 mio	..
Present value of debt (current US$)	..	612.0 mio	..
Short-term debt outstanding (current US$)	28.1 mio	25.5 mio	..
Aid per capita (current US$)	24.6	27.9	..
Source: *World Development Indicators database*, August 2004			

Annex 4F: Cote D'Ivoire Data Profile

	1999	2002	2003
People			
Population, total (mio)	15.5	16.5	16.8
Population growth (annual %)	2.5	2.1	1.9
Life expectancy (years)	..	45.2	..
Fertility rate (births per woman)	..	4.6	..
Infant mortality rate (per 1,000 live births)	..	116.0	..
Under 5 mortality rate (per 1,000 children)	..	191.0	..
Births attended by skilled health staff (% of total)	47.1	..	..
Child malnutrition, weight for age (% of under 5)	21.2	..	..
Child immunization, measles (% of under 12 months)	62.0	56.0	..
Literacy total (% of ages 15 and above)	47.6	..	..
Literacy female (% of ages 15 and above)	36.0	..	..
Primary completion rate, total (% age group)	40.5	..	..
Primary completion rate, female (% age group)	33.0	..	..
Net primary enrolment (% relevant age group)	55.8	..	..
Environment			
Surface area (sq. km) (thousand)	322.5	322.5	..
Freshwater resources per capita (cubic meters)	..	4,644.8	..
CO2 emissions (metric tons per capita)	0.6	..	..
Energy use per capita (kg of oil equivalent)	442.4	..	..
Economy			
GNI, Atlas method (current US$)	11.6 bn	10.2 bn	11.2 bn
GNI per capita, Atlas method (current US$)	750.0	620.0	660.0
GDP (current $)	12.6 bn	11.7 bn	13.7 bn
GDP growth (annual %)	1.6	-1.6	-3.8
GDP implicit price deflator (annual % growth)	0.9	5.2	1.8
Value added in agriculture (% of GDP)	22.0	26.2	27.6
Value added in industry (% of GDP)	24.2	20.4	20.8
Value added in services (% of GDP)	53.8	53.4	51.6
Exports of goods and services (% of GDP)	40.4	48.2	45.8
Imports of goods and services (% of GDP)	32.2	30.4	30.3
Gross capital formation (% of GDP)	13.1	10.5	10.1
Current revenue, excluding grants (% of GDP)	16.4	..	..
Overall budget balance, including grants (% of GDP)	-2.1	..	..
Trade and finance			
Trade in goods as a share of GDP (%)	63.0	63.9	..
Trade in goods as a share of goods GDP (%)	136.5	137.1	..
High-technology exports (% of manufactured exports)	7.1	2.6	..
Net barter terms of trade (1995=100)	103.0	..	..
Foreign direct investment, net inflows in reporting country (current US$)	323.7 mio	230.1 mio	..
Present value of debt (current US$)	..	9.4 bn	..
Total debt service (% of exports of goods and services)	26.8	14.1	..
Short-term debt outstanding (current US$)	1.3 bn	955.9 mio	..
Aid per capita (current US$)	29.0	64.7	..
Source: *World Development Indicators database*, August 2004			

Annex 4G: Gambia Data Profile

	1999	2002	2003
People			
Population, total (mio)	1.3	1.4	1.4
Population growth (annual %)	3.4	2.7	2.3
Life expectancy (years)	..	53.4	..
Fertility rate (births per woman)	..	4.8	..
Infant mortality rate (per 1,000 live births)	..	91.0	..
Under 5 mortality rate (per 1,000 children)	..	126.0	..
Child immunization, measles (% of under 12 months)	88.0	90.0	..
Net primary enrolment (% relevant age group)	66.7	..	..
Net secondary enrolment (% relevant age group)	22.9	..	..
Environment			
Surface area (sq. km)	11,300.0	11,300.0	..
Freshwater resources per capita (cubic meters)	..	5,759.5	..
CO2 emissions (metric tons per capita)	0.2	..	..
Economy			
GNI, Atlas method (current US$)	429.5 mio	424.3 mio	442.3 mio
GNI per capita, Atlas method (current US$)	340.0	310.0	310.0
GDP (current $)	431.9 mio	369.7 mio	386.3 mio
GDP growth (annual %)	6.4	-3.1	8.8
GDP implicit price deflator (annual % growth)	4.3	15.9	28.2
Value added in agriculture (% of GDP)	33.1	25.8	27.8
Value added in industry (% of GDP)	13.1	14.2	14.1
Value added in services (% of GDP)	53.8	60.0	58.1
Exports of goods and services (% of GDP)	46.0	52.0	40.7
Imports of goods and services (% of GDP)	60.6	69.2	54.2
Gross capital formation (% of GDP)	17.8	20.7	15.8
Trade and finance			
Trade in goods as a share of GDP (%)	47.2	67.3	..
Trade in goods as a share of goods GDP (%)	91.9	116.3	..
Net barter terms of trade (1995=100)	100.0	..	..
Foreign direct investment, net inflows in reporting country (current US$)	49.5 mio	42.8 mio	..
Present value of debt (current US$)	..	294.9 mio	..
Short-term debt outstanding (current US$)	22.2 mio	37.0 mio	..
Aid per capita (current US$)	26.4	43.6	..
***Source: World Development Indicators database*, August 2004**			

Annex 4H: Ghana Data Profile

	1999	2002	2003
People			
Population, total (mio)	18.4	19.9	20.4
Population growth (annual %)	2.0	1.7	1.7
Life expectancy (years)	..	54.9	..
Fertility rate (births per woman)	..	4.1	..
Infant mortality rate (per 1,000 live births)	..	60.0	..
Under 5 mortality rate (per 1,000 children)	..	97.0	..
Child malnutrition, weight for age (% of under 5)	24.9	..	..
Child immunization, measles (% of under 12 months)	73.0	81.0	..
Literacy total (% of ages 15 and above)	70.3	73.8	..
Literacy female (% of ages 15 and above)	61.6	65.9	..
Primary completion rate, total (% age group)	63.6	..	..
Net primary enrolment (% relevant age group)	61.8	..	..
Net secondary enrolment (% relevant age group)	31.5	..	..
Environment			
Surface area (sq. km) (thousand)	238.5	238.5	..
Freshwater resources per capita (cubic meters)	..	2,672.3	..
CO2 emissions (metric tons per capita)	0.3	..	..
Energy use per capita (kg of oil equivalent)	421.1	..	..
Electricity use per capita (kWh)	252.8	..	..
Economy			
GNI, Atlas method (current US$)	7.4 bn	5.5 bn	6.6 bn
GNI per capita, Atlas method (current US$)	380.0	280.0	320.0
GDP (current $)	7.7 bn	6.2 bn	7.7 bn
GDP growth (annual %)	4.4	4.5	5.2
GDP implicit price deflator (annual % growth)	14.0	22.8	29.3
Value added in agriculture (% of GDP)	36.5	36.0	35.2
Value added in industry (% of GDP)	25.4	24.3	24.8
Value added in services (% of GDP)	38.1	39.7	40.1
Exports of goods and services (% of GDP)	32.3	42.5	37.2
Imports of goods and services (% of GDP)	49.8	54.5	50.9
Gross capital formation (% of GDP)	21.5	22.3	19.4
Trade and finance			
Trade in goods as a share of GDP (%)	67.4	75.2	..
Trade in goods as a share of goods GDP (%)	110.2	129.3	..
High-technology exports (% of manufactured exports)	13.6	..	..
Net barter terms of trade (1995=100)	102.0	..	..
Foreign direct investment, net inflows in reporting country (current US$)	243.7 mio	50.0 mio	..
Present value of debt (current US$)	..	3.9 bn	..
Total debt service (% of exports of goods and services)	20.6	8.0	..
Short-term debt outstanding (current US$)	718.1 mio	592.7 mio	..
Aid per capita (current US$)	33.1	32.8	..
Source: *World Development Indicators database*, August 2004			

Annex 4I: Guinea Data Profile

	1999	2002	2003
People			
Population, total (mio)	7.3	7.7	7.9
Population growth (annual %)	2.3	2.1	2.1
Life expectancy (years)	..	46.2	..
Fertility rate (births per woman)	..	5.0	..
Infant mortality rate (per 1,000 live births)	..	106.0	..
Under 5 mortality rate (per 1,000 children)	..	165.0	..
Births attended by skilled health staff (% of total)	34.8	..	..
Child malnutrition, weight for age (% of under 5)	23.2	..	..
Child immunization, measles (% of under 12 months)	52.0	54.0	..
Net primary enrolment (% relevant age group)	49.1	..	..
Environment			
Surface area (sq. km) (thousand)	245.9	245.9	..
Freshwater resources per capita (cubic meters)	..	29,183.9	..
CO2 emissions (metric tons per capita)	0.2	..	..
Economy			
GNI, Atlas method (current US$)	3.6 bn	3.2 bn	3.4 bn
GNI per capita, Atlas method (current US$)	500.0	410.0	430.0
GDP (current $)	3.5 bn	3.2 bn	3.6 bn
GDP growth (annual %)	4.6	4.2	2.1
GDP implicit price deflator (annual % growth)	3.4	2.9	12.4
Value added in agriculture (% of GDP)	24.1	24.2	24.8
Value added in industry (% of GDP)	37.6	36.6	36.3
Value added in services (% of GDP)	38.3	39.2	38.9
Exports of goods and services (% of GDP)	21.9	24.3	23.7
Imports of goods and services (% of GDP)	26.7	29.8	27.4
Gross capital formation (% of GDP)	22.1	16.8	14.4
Current revenue, excluding grants (% of GDP)	11.7	..	..
Overall budget balance, including grants (% of GDP)	-2.4	..	..
Trade and finance			
Trade in goods as a share of GDP (%)	34.4	42.7	..
Trade in goods as a share of goods GDP (%)	54.3	63.6	..
Net barter terms of trade (1995=100)	86.0	..	..
Foreign direct investment, net inflows in reporting country (current US$)	63.4 mio	0.0	..
Present value of debt (current US$)	..	1.4 bn	..
Total debt service (% of exports of goods and services)	16.4	13.6	..
Short-term debt outstanding (current US$)	334.2 mio	289.4 mio	..
Aid per capita (current US$)	32.8	32.2	..
Source: *World Development Indicators database*, August 2004			

Annex 4J: Guinea Bissau Data Profile

	1999	2002	2003
People			
Population, total (mio)	1.3	1.4	1.5
Population growth (annual %)	2.7	2.9	2.9
Life expectancy (years)	..	45.4	..
Fertility rate (births per woman)	..	6.6	..
Infant mortality rate (per 1,000 live births)	..	130.0	..
Under 5 mortality rate (per 1,000 children)	..	211.0	..
Child immunization, measles (% of under 12 months)	70.0	47.0	..
Net primary enrolment (% relevant age group)	45.2	..	..
Environment			
Surface area (sq. km)	36,120.0	36,120.0	..
Freshwater resources per capita (cubic meters)	..	18,659.3	..
CO2 emissions (metric tons per capita)	0.2	..	..
Economy			
GNI, Atlas method (current US$)	200.3 mio	185.8 mio	202.2 mio
GNI per capita, Atlas method (current US$)	170.0	150.0	140.0
GDP (current $)	224.4 mio	203.4 mio	235.7 mio
GDP growth (annual %)	7.8	-7.2	-1.2
GDP implicit price deflator (annual % growth)	5.7	4.8	-1.4
Value added in agriculture (% of GDP)	60.6	62.4	69.0
Value added in industry (% of GDP)	12.3	13.1	13.4
Value added in services (% of GDP)	27.1	24.5	17.6
Exports of goods and services (% of GDP)	24.8	45.4	51.2
Imports of goods and services (% of GDP)	42.8	77.4	88.0
Gross capital formation (% of GDP)	16.8	14.7	14.8
Trade and finance			
Trade in goods as a share of GDP (%)	53.5	61.6	..
Trade in goods as a share of goods GDP (%)	72.9	86.1	..
Net barter terms of trade (1995=100)	81.0	..	..
Foreign direct investment, net inflows in reporting country (current US$)	8.6 mio	1,000.0 thousand	..
Present value of debt (current US$)	..	456.0 mio	..
Short-term debt outstanding (current US$)	82.2 mio	13.7 mio	..
Aid per capita (current US$)	39.4	41.1	..
Source: *World Development Indicators database*, August 2004			

Annex 4K: Liberia Data Profile

	1999	2002	2003
People			
Population, total (mio)	3.0	3.3	3.4
Population growth (annual %)	2.7	2.5	2.4
Life expectancy (years)	..	47.1	..
Fertility rate (births per woman)	..	5.8	..
Infant mortality rate (per 1,000 live births)	..	157.0	..
Under 5 mortality rate (per 1,000 children)	..	235.0	..
Child immunization, measles (% of under 12 months)	..	57.0	..
Literacy total (% of ages 15 and above)	52.1	55.9	..
Literacy female (% of ages 15 and above)	35.2	39.3	..
Net primary enrolment (% relevant age group)	69.9	..	..
Environment			
Surface area (sq. km) (thousand)	111.4	111.4	..
Freshwater resources per capita (cubic meters)	..	70,409.7	..
CO2 emissions (metric tons per capita)	0.1	..	..
Economy			
GNI, Atlas method (current US$) (mio)	336.7	475.5	445.4
GNI per capita, Atlas method (current US$)	110.0	140.0	130.0
GDP (current $) (mio)	441.8	561.8	442.2
GDP growth (annual %)	22.9	3.3	0.0
GDP implicit price deflator (annual % growth)	0.9	29.4	-18.8
Trade and finance			
Trade in goods as a share of GDP (%)	223.9	159.3	..
Net barter terms of trade (1995=100)	96.7	..	..
Foreign direct investment, net inflows in reporting country (current US$)	256.3 mio	-65,100,000.0	..
Present value of debt (current US$)	..	2.5 bn	..
Total debt service (% of exports of goods and services)	4.0	0.6	..
Short-term debt outstanding (current US$)	706.5 mio	955.7 mio	..
Aid per capita (current US$)	30.9	15.9	..
***Source: World Development Indicators database*, August 2004**			

Annex 4L: Mali Data Profile

	1999	2002	2003
People			
Population, total (mio)	10.6	11.4	11.7
Population growth (annual %)	2.4	2.4	2.4
Life expectancy (years)	42.6	40.9	..
Fertility rate (births per woman)	..	6.4	..
Infant mortality rate (per 1,000 live births)	..	122.0	..
Under 5 mortality rate (per 1,000 children)	..	222.0	..
Child immunization, measles (% of under 12 months)	52.0	33.0	..
Literacy total (% of ages 15 and above)	24.9	..	..
Literacy female (% of ages 15 and above)	15.4	..	..
Primary completion rate, total (% age group)	..	39.3	..
Primary completion rate, female (% age group)	..	30.7	..
Environment			
Surface area (sq. km) (mio)	1.2	1.2	..
Freshwater resources per capita (cubic meters)	..	8,792.0	..
CO2 emissions (metric tons per capita)	0.1	..	..
Economy			
GNI, Atlas method (current US$)	2.6 bn	2.7 bn	3.4 bn
GNI per capita, Atlas method (current US$)	250.0	240.0	290.0
GDP (current $)	2.6 bn	3.3 bn	4.3 bn
GDP growth (annual %)	6.7	4.4	6.0
GDP implicit price deflator (annual % growth)	-3.2	15.8	1.8
Value added in agriculture (% of GDP)	46.5	34.2	36.3
Value added in industry (% of GDP)	16.7	29.7	27.0
Value added in services (% of GDP)	36.8	36.1	36.7
Exports of goods and services (% of GDP)	26.5	32.5	27.0
Imports of goods and services (% of GDP)	38.2	40.9	38.2
Gross capital formation (% of GDP)	21.2	20.4	22.0
Trade and finance			
Trade in goods as a share of GDP (%)	54.1	60.7	..
Trade in goods as a share of goods GDP (%)	80.4	87.4	..
Net barter terms of trade (1995=100)	85.0	..	..
Foreign direct investment, net inflows in reporting country (current US$)	3.6 mio	102.2 mio	..
Present value of debt (current US$)	..	1.2 bn	..
Total debt service (% of exports of goods and services)	13.2	7.0	..
Short-term debt outstanding (current US$)	189.1 mio	150.8 mio	..
Aid per capita (current US$)	33.5	41.5	..
Source: *World Development Indicators database*, August 2004			

Annex 4M: Mauritania Data Profile

	1999	2002	2003
People			
Population, total (mio)	2.4	2.6	2.7
Population growth (annual %)	2.8	2.5	2.2
Life expectancy (years)	..	51.0	..
Fertility rate (births per woman)	..	4.6	..
Infant mortality rate (per 1,000 live births)	..	120.0	..
Under 5 mortality rate (per 1,000 children)	..	183.0	..
Child immunization, measles (% of under 12 months)	56.0	81.0	..
Literacy total (% of ages 15 and above)	39.7	41.2	..
Literacy female (% of ages 15 and above)	29.5	31.3	..
Net primary enrolment (% relevant age group)	61.0	..	..
Environment			
Surface area (sq. km) (mio)	1.0	1.0	..
Freshwater resources per capita (cubic meters)	..	4,334.6	..
CO2 emissions (metric tons per capita)	1.3	..	..
Economy			
GNI, Atlas method (current US$)	1.0 bn	1.1 bn	1.2 bn
GNI per capita, Atlas method (current US$)	390.0	430.0	430.0
GDP (current $)	957.9 mio	990.9 mio	1.1 bn
GDP growth (annual %)	5.2	3.3	5.4
GDP implicit price deflator (annual % growth)	1.0	3.8	4.5
Value added in agriculture (% of GDP)	25.2	20.8	19.3
Value added in industry (% of GDP)	29.3	29.4	30.0
Value added in services (% of GDP)	45.5	49.9	50.8
Exports of goods and services (% of GDP)	37.9	38.5	33.5
Imports of goods and services (% of GDP)	49.7	66.9	74.6
Gross capital formation (% of GDP)	17.8	30.8	41.2
Trade and finance			
Trade in goods as a share of GDP (%)	70.8	76.8	..
Trade in goods as a share of goods GDP (%)	119.4	133.9	..
Net barter terms of trade (1995=100)	101.0	..	..
Foreign direct investment, net inflows in reporting country (current US$)	900 thousand	12.0 mio	..
Present value of debt (current US$)	..	570.3 mio	..
Short-term debt outstanding (current US$)	277.9 mio	211.9 mio	..
Aid per capita (current US$)	89.3	135.1	..
Source: *World Development Indicators database*, August 2004			

Annex 4N: Niger Data Profile

	1999	2002	2003
People			
Population, total (mio)	10.4	11.4	11.8
Population growth (annual %)	3.4	3.0	2.9
Life expectancy (years)	..	46.2	..
Fertility rate (births per woman)	..	7.1	..
Infant mortality rate (per 1,000 live births)	..	155.0	..
Under 5 mortality rate (per 1,000 children)	..	264.0	..
Child immunization, measles (% of under 12 months)	36.0	48.0	..
Literacy total (% of ages 15 and above)	15.5	17.1	..
Literacy female (% of ages 15 and above)	8.1	9.3	..
Primary completion rate, total (% age group)	..	20.7	..
Primary completion rate, female (% age group)	..	16.6	..
Net primary enrolment (% relevant age group)	27.1	..	..
Environment			
Surface area (sq. km) (mio)	1.3	1.3	..
Freshwater resources per capita (cubic meters)	..	2,844.6	..
CO2 emissions (metric tons per capita)	0.1	..	..
Economy			
GNI, Atlas method (current US$)	2.0 bn	2.0 bn	2.4 bn
GNI per capita, Atlas method (current US$)	190.0	180.0	200.0
GDP (current $)	2.0 bn	2.2 bn	2.7 bn
GDP growth (annual %)	-0.6	3.0	4.0
GDP implicit price deflator (annual % growth)	2.0	3.0	0.8
Value added in agriculture (% of GDP)	40.7	39.9	40.0
Value added in industry (% of GDP)	17.2	16.9	17.1
Value added in services (% of GDP)	42.1	43.2	42.8
Exports of goods and services (% of GDP)	15.9	16.3	16.1
Imports of goods and services (% of GDP)	22.4	24.8	26.3
Gross capital formation (% of GDP)	10.2	12.8	16.5
Trade and finance			
Trade in goods as a share of GDP (%)	33.7	33.8	..
Trade in goods as a share of goods GDP (%)	56.3	57.2	..
Net barter terms of trade (1995=100)	77.0	..	..
Foreign direct investment, net inflows in reporting country (current US$)	300 thousand	7.9 mio	..
Present value of debt (current US$)	..	509.0 mio	..
Short-term debt outstanding (current US$)	78.1 mio	33.1 mio	..
Aid per capita (current US$)	18.0	26.1	..
Source: *World Development Indicators database*, August 2004			

Annex 4O: Nigeria Data Profile

	1999	2002	2003
People			
Population, total (mio)	123.9	132.8	135.6
Population growth (annual %)	2.5	2.2	2.1
Life expectancy (years)	47.5	45.3	..
Fertility rate (births per woman)	..	5.1	..
Infant mortality rate (per 1,000 live births)	..	100.0	..
Under 5 mortality rate (per 1,000 children)	..	201.0	..
Births attended by skilled health staff (% of total)	41.6	..	..
Child malnutrition, weight for age (% of under 5)	30.7	..	..
Child immunization, measles (% of under 12 months)	40.0	40.0	..
Literacy total (% of ages 15 and above)	62.5	66.8	..
Literacy female (% of ages 15 and above)	54.3	59.4	..
Environment			
Surface area (sq. km) (thousand)	923.8	923.8	..
Freshwater resources per capita (cubic meters)	..	2,108.7	..
CO2 emissions (metric tons per capita)	0.3	..	..
Energy use per capita (kg of oil equivalent)	705.6	..	..
Electricity use per capita (kWh)	69.2	..	..
Economy			
GNI, Atlas method (current US$)	31.7 bn	37.7 bn	43.0 bn
GNI per capita, Atlas method (current US$)	260.0	280.0	320.0
GDP (current $)	36.5 bn	41.5 bn	50.2 bn
GDP growth (annual %)	1.1	1.5	10.6
GDP implicit price deflator (annual % growth)	17.9	3.9	17.1
Value added in agriculture (% of GDP)	36.6	37.4	..
Value added in industry (% of GDP)	35.2	28.8	..
Value added in services (% of GDP)	28.2	33.8	..
Exports of goods and services (% of GDP)	35.1	39.5	35.8
Imports of goods and services (% of GDP)	39.2	45.7	40.4
Gross capital formation (% of GDP)	22.3	24.4	21.8
Trade and finance			
Trade in goods as a share of GDP (%)	61.5	52.0	..
Trade in goods as a share of goods GDP (%)	82.8	..	..
High-technology exports (% of manufactured exports)	13.4	..	..
Net barter terms of trade (1995=100)	108.0	..	..
Foreign direct investment, net inflows in reporting country (current US$)	1.0 bn	1.3 bn	..
Present value of debt (current US$)	..	31.5 bn	..
Total debt service (% of exports of goods and services)	6.9	..	..
Short-term debt outstanding (current US$)	6.5 bn	2.3 bn	..
Aid per capita (current US$)	1.2	2.4	..
Source: *World Development Indicators database*, August 2004			

Annex 4P: Senegal Data Profile

	1999	2002	2003
People			
Population, total (mio)	9.3	10.0	10.0
Population growth (annual %)	2.3	2.3	2.2
Life expectancy (years)	..	52.3	..
Fertility rate (births per woman)	..	4.9	..
Infant mortality rate (per 1,000 live births)	..	79.0	..
Under 5 mortality rate (per 1,000 children)	..	138.0	..
Child immunization, measles (% of under 12 months)	60.0	54.0	..
Literacy total (% of ages 15 and above)	36.5	39.3	..
Literacy female (% of ages 15 and above)	26.8	29.7	..
Primary completion rate, total (% age group)	..	48.6	..
Primary completion rate, female (% age group)	..	44.1	..
Net primary enrolment (% relevant age group)	60.7	..	..
Environment			
Surface area (sq. km) (thousand)	196.7	196.7	..
Freshwater resources per capita (cubic meters)	..	3,937.3	..
CO2 emissions (metric tons per capita)	0.4	..	..
Energy use per capita (kg of oil equivalent)	318.5	..	..
Electricity use per capita (kWh)	114.5	..	..
Economy			
GNI, Atlas method (current US$)	4.7 bn	4.6 bn	5.6 bn
GNI per capita, Atlas method (current US$)	500.0	460.0	550.0
GDP (current $)	4.8 bn	5.0 bn	6.5 bn
GDP growth (annual %)	5.0	1.1	6.5
GDP implicit price deflator (annual % growth)	1.5	2.7	0.9
Value added in agriculture (% of GDP)	18.6	15.0	16.9
Value added in industry (% of GDP)	20.5	21.6	20.8
Value added in services (% of GDP)	60.9	63.4	62.4
Exports of goods and services (% of GDP)	30.8	31.2	30.2
Imports of goods and services (% of GDP)	38.0	41.0	39.7
Gross capital formation (% of GDP)	20.6	19.7	20.1
Current revenue, excluding grants (% of GDP)	17.3	..	..
Overall budget balance, including grants (% of GDP)	-1.2	..	..
Trade and finance			
Trade in goods as a share of GDP (%)	54.5	51.9	..
Trade in goods as a share of goods GDP (%)	139.6	141.8	..
High-technology exports (% of manufactured exports)	12.6	4.4	..
Net barter terms of trade (1995=100)	98.0	..	..
Foreign direct investment, net inflows in reporting country (current US$)	156.6 mio	93.3 mio	..
Present value of debt (current US$)	..	2.4 bn	..
Total debt service (% of exports of goods and services)	14.3	..	..
Short-term debt outstanding (current US$)	308.1 mio	293.3 mio	..
Aid per capita (current US$)	57.7	44.8	..

Source: *World Development Indicators database*, August 2004

Annex 4Q: Sierra Leone Data Profile

	1999	2002	2003
People			
Population, total (mio)	4.9	5.2	5.3
Population growth (annual %)	2.1	2.0	1.9
Life expectancy (years)	..	37.4	..
Fertility rate (births per woman)	..	5.6	..
Infant mortality rate (per 1,000 live births)	..	165.0	..
Under 5 mortality rate (per 1,000 children)	..	284.0	..
Child immunization, measles (% of under 12 months)	62.0	60.0	..
Environment			
Surface area (sq. km)	71,740.0	71,740.0	..
Freshwater resources per capita (cubic meters)	..	30,563.5	..
CO2 emissions (metric tons per capita)	0.1	..	..
Economy			
GNI, Atlas method (current US$)	650.6 mio	723.4 mio	807.9 mio
GNI per capita, Atlas method (current US$)	130.0	140.0	150.0
GDP (current $)	669.3 mio	782.9 mio	793.3 mio
GDP growth (annual %)	-8.1	6.3	6.5
GDP implicit price deflator (annual % growth)	25.0	3.9	6.4
Value added in agriculture (% of GDP)	43.6	52.6	52.5
Value added in industry (% of GDP)	30.7	31.6	30.6
Value added in services (% of GDP)	25.7	15.7	16.9
Exports of goods and services (% of GDP)	13.8	18.1	18.0
Imports of goods and services (% of GDP)	19.8	40.5	48.7
Gross capital formation (% of GDP)	4.4	8.8	18.5
Current revenue, excluding grants (% of GDP)	7.1	..	..
Overall budget balance, including grants (% of GDP)	-8.5	..	..
Trade and finance			
Trade in goods as a share of GDP (%)	13.0	39.7	..
Foreign direct investment, net inflows in reporting country (current US$)	6.2 mio	4.7 mio	..
Present value of debt (current US$)	..	716.8 mio	..
Total debt service (% of exports of goods and services)	..	..	..
Short-term debt outstanding (current US$)	37.3 mio	16.3 mio	..
Aid per capita (current US$)	14.9	67.5	..
Source: *World Development Indicators database*, August 2004			

Annex 4R: Togo Data Profile

	1999	2002	2003
People			
Population, total (mio)	4.4	4.8	4.9
Population growth (annual %)	3.6	2.1	2.1
Life expectancy (years)	..	49.6	..
Fertility rate (births per woman)	..	4.9	..
Infant mortality rate (per 1,000 live births)	..	87.0	..
Under 5 mortality rate (per 1,000 children)	..	140.0	..
Child immunization, measles (% of under 12 months)	57.0	58.0	..
Literacy total (% of ages 15 and above)	55.8	59.6	..
Literacy female (% of ages 15 and above)	41.0	45.4	..
Primary completion rate, total (% age group)	62.5	..	..
Primary completion rate, female (% age group)	52.0	..	..
Net primary enrolment (% relevant age group)	90.7	..	..
Net secondary enrolment (% relevant age group)	26.6	..	..
Environment			
Surface area (sq. km)	56,790.0	56,790.0	..
Freshwater resources per capita (cubic meters)	..	2,521.0	..
CO2 emissions (metric tons per capita)	0.3	..	..
Energy use per capita (kg of oil equivalent)	326.0	..	..
Economy			
GNI, Atlas method (current US$)	1.4 bn	1.3 bn	1.5 bn
GNI per capita, Atlas method (current US$)	320.0	270.0	310.0
GDP (current $)	1.4 bn	1.4 bn	1.8 bn
GDP growth (annual %)	2.4	4.6	3.1
GDP implicit price deflator (annual % growth)	2.3	-0.1	2.8
Value added in agriculture (% of GDP)	40.9	40.1	40.8
Value added in industry (% of GDP)	20.4	21.6	22.2
Value added in services (% of GDP)	38.7	38.3	37.1
Exports of goods and services (% of GDP)	32.0	33.1	33.8
Imports of goods and services (% of GDP)	43.3	50.1	47.4
Gross capital formation (% of GDP)	18.9	21.7	21.5
Trade and finance			
Trade in goods as a share of GDP (%)	69.5	78.0	..
Trade in goods as a share of goods GDP (%)	113.4	126.4	..
Net barter terms of trade (1995=100)	115.0	..	..
Foreign direct investment, net inflows in reporting country (current US$)	42.6 mio	74.7 mio	..
Present value of debt (current US$)	..	1.2 bn	..
Total debt service (% of exports of goods and services)	8.9	2.5	..
Short-term debt outstanding (current US$)	153.7 mio	191.9 mio	..
Aid per capita (current US$)	16.3	10.7	..
***Source: World Development Indicators database*, August 2004**			

Annex 4S: Growth performance and poverty incidence

Growth performance	GNI per capita (US$)		GDP growth rate[105]	
	1990	2000	1980-1990	1990-1999
Benin	360	380	2.5	4.7
Burkina Faso	290	230	3.6	3.8
Cape Verde	980	1330		
Cameroon	970	570	3.4	1.3
Cote d'Ivoire	780	660	0.7	3.7
Gambia	320	330		
Ghana	390	350	3	4.3
Guinea	460	450		4.2
Guinea Bissau	220	180		
Mali	270	240	0.8	3.6
Niger	310	180	-0.1	2.5
Nigeria	270	260	1.6	2.4
Senegal	720	500	3.1	3.2
Sierra Leone	260	130		
Togo	430	300	1.7	1.5

Source: *World Bank, 2001.*
AfDB, Statistics on African Countries.

Incidence of poverty	Population living on less than US$ 1 a day (%)	Population living on less than US$ 2 a day (%)
Benin	17.8	63.6
Burkina Faso	61.6	88.2
Chad	81.7	93.7
Gambia	35.6	78.0
Guinea	64.9	89.2
Guinea Bissau	78.8	92.9
Liberia	47.0	83.0
Mali	71.6	91.1
Niger	74.4	91.8
Senegal	15.1	59.8
Sierra Leone	60.4	87.7
Togo	66.4	89.6

Source: *UNCTAD, 2002*

[105] *Annual percentage growth rate of GDP at market prices based on constant local currency. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.*

Annex 4T: Social indicators

Social Indicators	Illiteracy rate (%)		Infant mortality rate (per 1,000)		Access to safe water (% of population)	
	Total		Total		Total	
	1990	2000	1990	2000	1990	2000
Benin	71.9	59.7	99.2	83.8	55.0	63.0
Burkina Faso	83.6	76.1	109.8	91.8	70.0	
Cape Verde	36.2	25.8	68.0	52.4	51.9	74.0
Cameroon	37.4	24.1	89.8	82.2	34.0	62.0
Cote d'Ivoire	66.2	52.9	97.2	84.2	69.0	77.0
Gambia	74.4	63.4	138.0	119.0	64.0	62.0
Ghana	41.6	28.5	79.4	64.8	65.0	64.0
Guinea			139.4	118.0	52.0	48.0
Guinea Bissau	71.8	61.2	145.0	125.0	22.5	49.0
Liberia	60.6	46.0	142.8	91.8	46.0	
Mali	74.4	58.6	139.0	124.0	11.0	65.0
Niger	88.6	84.1	147.6	130.0	55.2	59.0
Nigeria	51.4	36.1	100.6	82.6	47.0	57.0
Senegal	71.7	62.6	71.2	59.0	44.0	78.0
Sierra Leone			190.2	153.6	39.0	28.0
Togo	54.0	42.7	93.4	78.2	59.0	54.0

Source: AfDB, Statistics on African Countries, Abidjan.

Part 5: Case Study - Examples from Swiss development programmes and potential for collaboration between IUCN and Swiss organizations

By Nadine Speich

5.1 Summary

- Integrated concepts such as integrated water management or food security are particularly good frames to enhance poverty-environment linkages; the clustering of thematic issues and activities such as NRM, provision of environmental services and sound-chemicals management can make intervention more effective.
- Supporting multilateral initiatives can be beneficial for poverty-environment linkages, e.g. by causing work with NGOs and the private sector to be more systematic (e.g. new GEF projects in the chemicals management area); and by making information exchange and funding more effective (e.g. the global mechanism under the convention on desertification).
- Whilst creating markets or improving access to markets can be beneficial for increasing incomes, these approaches can also fail due to other factors, e.g. unclear land tenure, difficulty in economic valuation, or low start up financing.
- Land tenure is again highlighted as a key issue in promoting market access and the use of market instruments, and in applying diversified risk reduction strategies (insurance, saving schemes). Decentralisation policies provide new frames to tackle land tenure along with building the capacity of local institutions.
- New integrated approaches to risks and protection taking into account environmental, social and economic factors such as natural disasters, health factors, loss of activity, retirement, debt, income or post-harvest losses, are expected to make poverty reduction more effective (e.g. insurance and saving strategies).
- Social and cultural considerations at the household level are a good starting point for building on diversified livelihood strategies.
- A systematic gender analysis is a prerequisite for good project design and implementation, and increased focus and support should be given to the development and use of methodologies for gender approaches in NRM and conservation for poverty reduction.
- The following are research issues of interest to Swiss organizations and for IUCN: social learning and indigenous knowledge in syndrome mitigation, decentralisation and local livelihood property rights, empowerment and the role of NGOs, vulnerability to conflicts and natural disasters, health, sanitation and poverty-related diseases.

5.2 Introduction and definitions

The purpose of this paper is to explore examples of projects and research studies on poverty reduction whenever this objective is related to an objective of protecting the environment. In the first stage,

this paper gives a state of the art review of Swiss development and research, providing examples of selected projects. In the second stage, it provides some elements and proposals for possible cooperation between SDC and IUCN. SDC is taken as the main Swiss organization in development since it supports many other organizations in the field and is the main contributor of research activities in development. Nevertheless, the paper also includes some Swiss NGOs such as Intercooperation, which could be of interest for IUCN. IUCN is an international body gathering governments and NGOs and already has a frame agreement with SDC for common activities. IUCN's field of work is conservation and protection of biodiversity. Its current area of interest is to explore PRSs and conservation. This paper will contribute to the review of activities and research on this topic but will take into account the protection of natural resources in a broad sense.

Poverty is considered a multifaceted concept. As defined in the World Bank Report (WDR) 2000/2001, poverty has the following dimensions: lack of opportunity or access to markets, resources, income generating opportunities, empowerment, influence on state institutions, participation in political processes and local decision-making and security, as well as vulnerability to health, environmental, economic and social risks and lack of capability, or human capital and ability to be educated and skilled. In summary, the four main dimensions are: lack of opportunity and assets, lack of power, lack of security and lack of capability.

IUCN, like many other organizations and donors, has taken the definition of the World Bank as a basis for its work. IUCN has explored the poverty-environment linkages more deeply because it has recognized that the linkages were far more complex than had been assumed[106]. In IUCN's paper *Elements of IUCN's Conceptual Framework*[107], poverty-focused conservation has been defined as aiming "to ensure that environmental resources are sustainably managed and positively employed to empower the poor and help them secure a desirable livelihood, increase their assets, and reduce vulnerability to shocks". In this paper guidance on possible conservation activities in areas of high poverty is given in a matrix combining entry points, local interventions and policy interventions for the four dimensions of poverty.

5.3 The Swiss approach to reinforcing poverty alleviation and environmental protection

After an overall presentation of SDC's policy, some key issues such as integrated approaches, empowerment, markets, land tenure and security are tackled.

5.3.1 Overall vision and objectives of SDC for poverty and sustainable development

The overall objective of SDC is sustainable development. One of the three main goals of SDC's 2010 strategy, along with addressing relief and the causes of conflicts, is to "**promote its partners' initiatives in reducing poverty**". SDC does not have a quantitative definition of poverty but links economic issues to social, cultural and ethnic ones. For instance, the definition of poverty in the regional strategy for Latin America 2002-2010 is based on a multidimensional concept with reference to the World Bank report 2000/2001 and its three dimensions of poverty: create opportunities, contribute to empowerment and increase security. In the Peru country programme 2002-2007, poverty is defined as a lack of social equity but also as the socio-ethnic marginalization of Andean and Afro-American people in Peru (page 21). The focus and main target group of the country programme is derived from this definition.

SDC has not defined a conceptual frame for linking poverty to the environment. Traditionally, the main sectoral programmes have been considered to be oriented towards poverty reduction and to be based on sustainable NRM. In many cases, the poverty-environment link becomes obvious when the programme

[106] *Background paper on poverty and the environment, preliminary draft prepared for the Poverty and Environment Workshops of IUCN, 4-7 August 2003, Kenya.*
[107] *Work in progress, Draft October 1, 2003.*

addresses poverty in marginalized and environmentally fragile areas. For instance, the overall goal of the India country programme 2003-2010 is sustainable and equitable rural development, and the objectives refer to decentralisation and empowerment of poor people in semi-arid rural India. The areas that focus directly on reinforcing the link between poverty reduction and protection of the environment are: sustainable water use (access to water for drinking and food production, income generation and empowerment), and access to clean sources of energy.

The new Natural Resource and Environment (NRU) strategy provides a frame for the objectives and activities in the field of NRM and environment protection. The objectives of the NRU strategy of SDC, which focuses on rural areas, refer to the following four clusters: (1) promotion of sustainable strategies and policies; (2) access to production factors, e.g. eco-technology, ecological capital and decisions; (3) security and resilience to shocks and disasters; (4) empowerment to reinforce local competencies and develop knowledge and capacities.

5.3.2 Opportunities created by taking an integrated approach to sustainable development at SDC

The orientation of SDC towards integrated and holistic concepts provides new opportunities to link poverty reduction and environmental protection. This can be illustrated in the examples of integrated water resource management (IWRM) and food security. There has been an evolution of SDC programmes from a sectoral approach to a thematic orientation. This new paradigm aims at promoting integrated approaches. Different strategies and policies are combined, for instance in order to strengthen income generation. The social dimension or the governance dimension of SDC strategies and policies is highlighted and new thematic priorities such as decentralisation emerge.

Box 5.1 The Peru country programme 2002-2007

The Peru country programme 2002-2007 illustrates the shift from sectoral to thematic areas of work. In order to achieve poverty reduction through empowerment, security and opportunity, the following three new thematic fields of action have been defined: (1) promotion of sustainable economic growth, (2) promotion of good governance and decentralisation, (3) promotion of access to basic infrastructure and productive services. The previous programme had focused on a sector such as water and sanitation. Poverty-environment objectives are reinforced under the sustainable economic growth area because there is a stronger emphasis on commercialisation of products that are produced with a focus on the protection of natural resources. *Under the area of provision of "social services", the programme aims at building on the long-term experience of SDC in the provision of drinking water and applying the lessons to other services such as* environmental services.

The new integrated approach also implies new working practices within SDC. Collaboration between the five thematic divisions of SDC's thematic department is enhanced through working groups with representatives from different thematic sections. The draft IWRM strategy "Water 2015" is a good example. The aim of this strategy is to promote a common understanding and coordination of activities in the water sector and to link social aspects to economic and environmental ones. Reflecting the main areas of work of the IWRM, an **IWRM team** has been established, comprised of a representative of the NRU division and of the social development division.

Box 5.2 Concept of integrated water resources management (IWRM) at SDC

The following work areas of the concept are particularly relevant to SDC:

- Water for people*: sustainable access to safe drinking water. This area is covered by the social development division. Environmental aspects deal with wastewater management systems (including analysis and monitoring).*
- Water for food*: water for food security is covered by NRU. Environmental aspects focus on including soil protection and sustainable food production methods (organic, others).*
- Water for Nature: *ecosystem protection is also covered by NRU.*
- Other areas of minor interest*: natural disasters, technical accidents involving water pollution, cleaner production, and alternative energies (ecological waterpower, small waterpower systems).*

At the operational level SDC has acquired much experience over a long time from poverty reduction programmes combined with water-management programmes. The new strategy will be built on this experience in different sectors of water management. Previous experience in watershed management will help to define new innovative and people-centred approaches.*

The ***Indo-Swiss Participative Watershed Development Project in Karnataka*** *(implemented by Intercooperation) aims to reduce poverty in semi-arid areas of Karnataka state. It uses people-centred approaches involving watershed communities in the identification, planning and implementation of activities. It focuses on capacity building, watershed development and income generation. The project works through Village Development Societies and Water Management Committees to address long-term development issues at the local level. Activities concentrate on watershed development and agricultural production oriented support. Self Help Groups are supported to promote non-land based income generation.*

** Water 2015, Principles of Policy and Strategic Lines, Draft, September 1, 2004*

The challenge is to make the integrated approach operational. An example of this is the integration of sound-chemicals management into IWRM. The use of chemicals affects protected areas and the conservation of natural resources through activities such as agricultural production and mining. Although productive activities are sometimes located far from the protected areas, their impact on water pollution can substantially affect conservation of the protected areas. Comprehensive approaches that aim to reinforce poverty reduction and sustainable NRM also have to take into account the principles and components of integrated chemical management such as risk analysis and management of chemicals or good monitoring of water quality. Improper use of chemicals has substantial consequences in terms of costs relating to health and environmental degradation (soil, water and air pollution due to production, transport, use or disposal of chemicals). One solution might be to build clusters of projects linking conservation of biodiversity to sound-chemicals management and the provision of environmental goods and services.

Another example of the emergence of an integrated approach is the concept of **food security**. SDC is currently elaborating a concept paper[108] on food security and implementing new forms of collaboration in order to involve the income generation division (dealing with commercialisation strategies and access to markets), the governance division (dealing with international trade aspects and globalization) and the NRU division (dealing with agricultural production and subsistence strategies in relation to biodiversity, soil and water protection and NRM). Based on the assumption that poverty is the main cause of food insecurity, SDC considers this approach as essential in its development programmes. SDC recognizes the four following pre-conditions to food security: access to food, availability of food, existence of local markets and dependence on imports and food aid. In its bilateral programmes, the following elements are directly linked to food

[108] *SDC, NRU, Sécurité alimentaire : la dimension coopération au développement, Draft, September 25, 2004.*

security: priority to local foodstuffs, production and management of quality seeds, household management practices and technologies and sustainable use of soil and water. It considers also the principle of food sovereignty as essential.

A third example is the promotion of an integrated approach to risk management. This approach implies multiple strategies for poor families including, among others, social risk insurance, savings policies, and prevention of natural disasters.

Poverty-environment linkages are also enhanced in crosscutting policies such as the **promotion of information technologies**. The Information and Communication Technologies (ICT) strategy highlights the importance of ICT applications for sustainable livelihood strategies, empowerment and global governance in environmental fields such as *Weather information* (forecasts for producers and in the frame of disaster prevention and preparedness), *Market information* (prices for food products produced in a sustainable way) and *Coordination of environmental campaigns* between NGOs from the North and South (Narmada dam, Ilisu dam).

5.3.3 Empowerment and capacity building at the local and global level as a specific area of empowerment

Empowerment is considered a key entry point for poverty reduction and NRM. In some projects, local communities are empowered specifically in the management of natural resources with the aim of reducing poverty. SDC will carry out more work on the impact of the NRM strategies and approaches on the achievement of the MDGs.

Empowerment at local level

Empowerment dimensions consist of rights and interests, participation and influence. The Ecuadorian programme makes an interesting statement, mentioning that empowerment can also bear potential for conflicts and states that empowerment of beneficiary groups and organizations also means being more involved with the central and local state and its institutions.

Empowerment at global level

At the global level, the Global Environment Programme aims to support initiatives for the promotion of global environmental protection, in particular the protection of the global common goods. In particular, the programme aims to strengthen the main environmental conventions and their implementation in developing countries. The programme intends to link the global policy level with local initiatives in order to achieve this goal. The **Latin America Mid-term Strategy 2002-2010** "Apoyar a America Latina para reducir la pobreza" integrates the global environment dimension: the global environment programme contributes directly to poverty reduction when it concerns rural areas and the poor target groups and when environmental preoccupations (protection of biodiversity, native forests and agro-biodiversity) are linked with food security strategies and income generation activities such as commercialisation.

Intervention in the frame of the global environmental conventions can be particularly effective as far as poverty reduction and NRM is concerned. The Basel Convention on transboundary movements of dangerous waste and their disposal and the Stockholm Convention on persistent organic pollutants have been mentioned before. They are particularly effective for initiatives relating to the reduction of pollution and control in or around protected areas. Another good example is the Convention on Desertification. SDC's Africa programme for fighting desertification illustrates the variety of interventions in order to strengthen poverty-environment linkages. There is no distinction between protected and non-protected areas. The work on poverty-environment in the frame of the convention enables more optimal fundraising through the financial mechanisms (e.g. the global mechanism) of the convention.

Strengthening the role for NGOs and public-private partnerships is considered to reinforce poverty reduction and environmental protection. Therefore, SDC supports new GEF projects such as the African Stockpile Project (ASP) for the clean-up of obsolete stocks of pesticides and the prevention of their

accumulation, which was set-up in the frame of the First Continental Conference of the Basle Convention in Rabat in 2001. The ASP provides a possibility for SDC to participate in a broad partnership involving the private sector. Both projects focus on civil society participation and strengthening the voice of the poor on sound-chemicals management. They are new projects that were conceived in view of the lack of NGO influence and private sector involvement in sound-chemicals management in poorer countries and especially African countries.

Strengthening the policy dialogue can be a priority area of work for poverty-environment linkages. SDC supports the International Rainwater Harvesting Alliance (IRHA) in order to promote rainwater harvesting at international policy level and to integrate it in the PRSs.

Box 5.3 Poverty-environment and the International Rainwater Harvesting Alliance (IRHA)

The IRHA is a platform of NGOs and organizations working for the promotion of rainwater harvesting practise and techniques for drinking water and food production. The aim is to provide a platform for the collection of practices, the dissemination of practices at local level, the integration of the issue in national policies and poverty reduction strategies. The platform will catalyse the initiatives of local NGOs, and enhance learning processes and up-scaling through the participation of universities and international organizations.

5.3.4 The importance of productive assets and strategies

Many programmes combining poverty reduction and NRM pursue the overall aim of increasing production and income capacity. The Eastern and Southern Africa Medium-term Strategy 2000-2010 for Development Cooperation in East and Southern Africa gives priority to pro-poor and pro-environment economic development. The programme focuses on **food security and market development** in relation to NRM and income generation.

Multi-purpose strategies are developed in order to take into account the variety of social, economic and environmental objectives.

***Box 5.4 Farm Forestry Project (FFP), Pakistan** (implemented by Intercooperation)*

The FFP's objective is to promote multi-purpose trees within the farming system to optimise benefits for the poor in dry rainfed rural areas of the North West Frontier of Pakistan. The project contributes to poverty reduction through productivity enhancement from the farming system and by making the best use of available water. The project supports the communities in implementing and improving low-cost water harvesting structures. The issues of equity and equality in terms of distribution of benefits of project interventions are essential, ensuring the involvement of the poor. Farm forestry is considered an inherently commercial and market oriented activity based on local knowledge.

The field of **cleaner production** is also a thematic area for enhancing poverty reduction and environmental protection, especially when productive activities are carried out in or around the protected areas. Lessons from small-scale mining in Ecuador, Peru and Bolivia (see Annex 5A) reveal that in most cases, because of the poverty and social dimension, informal activities in sensitive areas cannot be reversed. Therefore, environmental management also becomes critical for the subsistence of miners' families. Low-cost, simple technologies can be disseminated in order to mitigate pollution, but pollution reduction effects have to be quantified and documented in the frame of a dissemination strategy.

5.3.5 The potential and limits of access to markets

Many productive projects have focused on marketing and commercialisation in order to strengthen poverty reduction through income generation. Economic valuation of resources and practices is developed as a basis for the marketing strategies of goods and services, for the application of economic instruments and for risk evaluation. Some projects support economic valuation of overall environmental protection at the national level per se, as an instrument of policy dialogue. Calculations of the cost of environmental degradation include health costs and the impact on social services. For instance, SDC supported the economic valuation of the environment in several Northern African countries, e.g. Egypt and Algeria, in the frame of the World Bank METAP programme[109].

There is a potential for commercialisation as an entry point for products or services provided by poor communities through sustainable NRM. Commercialisation can add value to natural resources. SDC has promoted workshops like the 2000 ASOCAM[110] workshop in Ecuador for the trade of products produced in hillside areas. The possibilities of commercialising vegetables, traditional crops and products such as quinoa, tubers, and spices as well as transformed products like chips or corn flakes are analysed. A variety of different instruments are analysed and tested such as local or regional product stock exchanges, brand marks, labels and "Appellations of Origin". Many Swiss organizations that are indirectly supported by SDC have gained strong experience in the commercialisation of products from organic production (textiles from organic cotton, cosmetics) with a strong focus on sustainable management of natural resources such as water or forests.

Lessons from some projects indicate that there are limits to the commercialisation and market approach in order to reduce poverty and achieve sustainable use and conservation of natural resources. For some communities in some areas, there is no potential for market orientation. New projects like the BioAndes project are set-up, based on this lesson learned.

Box 5.5 BioAndes - Biodiversity in the Andes (2004-2014)

The project is based on the assumption that the use and conservation of biodiversity is a key for poverty reduction. The objective of the project is to enhance the valuation and respect of the diversity of the bio-cultural heritage in the Andean region (Peru, Ecuador and Bolivia). The project was conceived based on results of past projects (in situ and ex situ conservation of Andean root and tubers with the International Potato Centre, CIP). The poverty objective is the use and conservation of biodiversity realised for economic development. The project also targets the ***vast majority of species that have no market value.*** *In that respect, this project is a complement to existing projects for fostering trade and economic valuation of biodiversity through market approaches. The environment objective is to target the substantial part of biological diversity located* ***outside the protected areas*** *and to improve human and institutional capacity for sustainable management of biodiversity. Instruments such as learning and exchange platforms, training for biodiversity, and participation in policy making are used to achieve the goal.*

The strategies for providing environmental services and marketing environmental products can have limits. Limiting factors include the difficulty of internalising the entire environmental costs of conservation, location in marginal areas with poor infrastructure (e.g. transport and communication), competition with low priced imports facilitated by globalization, the limits of the valuation practices (landscape value, spiritual values), unsolved property conditions and informality. Several projects tend to address the question of property rights before promoting commercial strategies and the use of economic instruments because it has been noted that unsolved property questions have hindered the marketing of environmental goods and services.

[109] *Studies by Ecosys, G. Pillet.*
[110] *Agricultura Sostenible Campesina de Montaña, sustainable hillside agriculture.*

The presentation of the interrelations between forests and water in a SDC-funded publication, "Forests and Water: Managing Interrelations"[111], discusses the relevance of payment and compensation for environmental services for poverty reduction. Based on a historical review, important driving forces for payments and compensation for environmental services are identified, such as public relations motivations by companies, income-generating opportunities, and the potential to relieve public budgets or the pressure from future potential legislation.

Box 5.6 Prerequisites for payments and compensation for environmental services identified in the forests and water sector

- *clear property rights*
- *market creation through exchange platforms or other start up mechanisms*
- *negotiation of the instruments, access to the adequate information,*
- *economic valuation and valuation of common environmental values*
- *financing of market and process establishment*
- *compensation for the cost and risk of change.*

Source: "Forests and Water: Managing Interrelations", CDE, Berne, 2004.

5.3.6 Increased focus on land tenure

Several projects have included property rights issues as an area of work in the course of the implementation, based on the lesson that clear ownership relations are a prerequisite for the market approach. For instance, globalization puts pressure on the attribution of clear property rights in order to mobilize adequate resources (financial resources), the obtaining of insurance for a whole range of risks, and increasing entrepreneurial development. In particular, economic considerations of property right schemes point out the correlation between private property and the exclusion of some actors from land tenure as well as from credit allocation and insurance possibilities.

Land tenure issues are addressed in the frame of decentralisation strategies and integrated approaches to poverty reduction and sustainable use of natural resources. Lessons from projects show that property right issues are combined with activities strengthening local authorities. The PASOLAC project (see Box 5.7) provides an example for the work on property rights issues in order to have a basis for the provision of environmental services and for addressing weak local authorities.

[111] *Development and Environment Reports No19, CDE, Berne, 2004.*

Box 5.7 The Programa de Apoyo para la Agricultura Sostenible en Laderas de América Central - PASOLAC *(implemented by Intercooperation)*

PASOLAC was set up in Nicaragua in 1992 and later expanded into El Salvador and Honduras. The project aims to improve sustainable soil fertility and market oriented production technology on hillsides. It places special emphasis on identifying and validating traditional and modern approaches. PASOLAC assists farmers to validate and introduce technologies that reduce vulnerability to drought, focusing on water conservation, drought resistant crops, water harvesting and storage and micro irrigation. A more recent strategy is to test mechanisms for payment for environmental services to support sustainable NRM.

The project has evolved and integrated new issues in order to strengthen poverty-environment strategies. There has been a shift from agriculture and agricultural extension to socio-economic development (income generation, payment for environmental services) and strengthening of local authorities. The project also newly tackles environmental risks and risk analysis in the field of ***climate changes*** *and institutional weaknesses within the public sector (change of personal, political instability).*

Evidence has been gained that environmental degradation is linked to ***unclear tenure situations.*** *Institutional strengthening and policy dialogue should help address this issue.*

The objectives of the different phases have been the following:

- *Phase 1: introduce improved agricultural practices in hillsides in Nicaragua*
- *Phase 2: increase in involved institutions*
- *Phase 3: promote techniques in soil and water conservation and achieve regionalisation in Central America*
- *Phase 4: promote the introduction of payments for environmental services, promotion of market-orientation*
- *Phase 5 (01/2002-12/2007): reduce* ***vulnerability*** *and increase* ***food security and sales****, with a special focus on enhancing the policy dialogue.*

Technology development, dissemination of improved agricultural practices, new payment models, policy dialogue and institutional strengthening are the key instruments.

Several projects clearly integrated an objective of promotion of common property schemes as a strategy of NRM. Some projects like the ProBosques project in Guatemala shows evidence of the success of traditional common property schemes.

Box 5.8 Three examples of promotion of common property rights

The ProBosques, Guatemala *(implemented by Helvetas 1997-2004)*

The project is developed in the poorest areas of the country (Altiplano Occidental). It aims at resolving the conflicts of populations that do not have food security and do not have registered property rights for their land (in communal or private hands) and giving technical and financial capacity to municipalities for natural resource management.

There has been a shift from activities of drawing limits of protected areas and of certification of municipal property rights to establishing "mancomunidades" of municipalities and disseminating a model of decentralised management of natural resources and protected areas.

The environmental objective of the project is to establish Regional Municipal Areas ("Parques Regionales Municipales"), contribute to develop the implementation of the Corredor Biologico Mesoamericano and fight against deforestation because of agriculture or use of wood (among others, precious woods). The poverty-environment areas are reinforced in the frame of a decentralised management of protected areas, the development and application of a concept of "protection-conservation-participation-environmental education", the reconciliation of the protection of protected areas with the ***improved livelihood of indigenous populations*** *(Maya) who depend on forestry and the* ***clarification of property rights.*** *Where appropriate, the project helped to maintain traditional collective property rights over forests.*

Three main instruments have been used to achieve the goals:

- *organizational strengthening ("Departamentos de Areas Protegidas y Medio Ambiente") of municipalities*
- *participatory processes between communities and authorities to approve and implement master plans and operational plans* ***("co-management****")*
- *training modules for local authorities.*

The Jekasy, Mali *(implemented by Intercooperation)*

The project started in 1995 as a project of sustainable natural resource management. The Jekasy project continued in the management of common resources for economic development and socio-institutional development. Professional local associations and unions are supported in improving negotiation capacities with municipalities. Concerted plans for natural resource management are developed. It facilitates conflict resolution between sedentary farmers and migrant herders for access to and use of scarce resources such as water and soil.

The Extension and Training Support for Forestry and Agriculture in the Uplands - ETSP, Viet Nam *(implemented by Helvetas)*

The Extension and Training Support project for Forestry and Agriculture in the Uplands (ETSP) focuses on three areas of intervention: poverty reduction, sustainable natural resource management and capacity building. It targets poor farmers who are highly dependant on forestland in remote areas of the centre of the country. Its overall goal is "To provide cost-effective, demand driven systems of extension and training to upland farmers and service providers for enhanced sustainable resources management and improved household livelihoods".

In many communities and municipalities more than half of the land is officially covered by forests but is effectively used for agricultural production or livestock. Project results show that an important criterion for preferences is income generation from the activities. Poverty can be reduced only if the productive activities generate enough revenue to cover the cost of environmental protection and if the sustainable practices provide the best cost-benefit ratio.

The current objectives of ETSP consist in improving livelihoods through the introduction of need-based extension methods and content and strengthened local institutional capacities; developing effective and sustainable extension and training services; and assisting the Ministry of Agriculture and Rural Development (MARD) in the development and coordination of appropriate research, extension, education and training systems. The key issues and poverty-environment linkages of the programmes are the following:

- *Decentralised planning mechanisms at village and communal level in upland minority areas, the so-called Village and Commune Development Planning (VDP/CDP) that empowers and mobilises local human resources including the vulnerable segments of the population.*
- *Land use planning and land allocation processes initiated wherever access to and control over land and water resources exist.*
- *Community based resource management, especially for forests.*
- *Technology Development and Adaptation (PTD) to identify appropriate and sustainable solutions for resource management.*
- *Market assessment and development (MA/D) to generate more and stable incomes from a variety of products and services.*
- *Biodiversity to reduce risks and stabilise livelihoods.*
- *Access to services related to resource management and markets, access to information and continued education.*
- *Impact Monitoring and Assessment (IMA) in order to steer and manage the project with a poverty alleviation focus.*

5.3.7 New trends on security and resilience of populations

The objective of increasing security is relatively new in the frame of development cooperation. Activities aiming at promoting security are integrated in existing projects in order to address specific contexts with risks of natural disasters.

New projects emerge in the course of reconstruction after an emergency intervention. Activities of reconstruction after the earthquake in Turkey are implemented in poor areas in urban and peri-urban contexts. The objective of the reconstruction project in Turkey is the prevention of accidents. New projects also address the sustainable conservation and use of natural resources, like the FORZA project in Ukraine.

Box 5.9 Swiss-Ukrainian Forest Development Project (FORZA) in Zakarpattia, Ukraine

The project was designed after the floods in 1998 and 2001 and in the frame of the Swiss-Ukrainian collaboration in natural disaster relief and reconstruction. Its aim is to improve livelihoods and reduce environmental risks. It focuses on multi-functional forest management, considering that forests protect from flooding and erosion, and on income provision through timber and non-timber use.

A key question arising from field interventions and projects is that of insurance. New conceptual frames are currently being examined to analyse risk management from an integrated perspective. Local communities, especially farmers, have to face a variety of risks. Social protection does not deal exclusively with the social sphere (health insurance, pension fund) but also with the productive sphere and livelihoods (to cover risks of market fluctuations, natural disasters). New partnerships are built in order to establish insurance schemes that can promote livelihoods and cover diversified risks.

Box 5.10 SAHA (Sahan'Asa Hampandrosoana ny Ambanivohitra) in Madagascar
(implemented by Intercooperation)

SAHA is a rural development programme with a focus on protection for social, economical and environmental risks of the rural society. Valuation of natural resources is pursued mainly as an objective in order to achieve property security. Risk management is linked to food security and vulnerability, with the promotion of common saving schemes at local level (saving groups) and common farming practices. The programme also works on access to basic social services, rural communication and local governance. Results are evaluated according to four areas of monitoring: empowerment, gender balance, environment and poverty alleviation.

5.4.6 Summary of key interventions in poverty-environment

The issues of interventions are summarized in Table 5.1 in the categories of solutions to poverty dimensions set by the World Bank.

Table 5.1 Poverty-environment interventions and issues

Solution for a poverty dimension	*Poverty-environment issues at policy level*	*Poverty-environment issues at implementation level*	*Example of initiative/project*
Empowerment (poverty dimension of powerlessness)	- Global conventions: participation of poor population in the negotiations - Supporting new policy initiatives - Pro-poor public-private partnerships - Strengthen participation of NGOs in international policy processes	- Participatory processes - Strengthen role of NGOs - Implementation of property rights schemes - Gender and poverty-environment	- IRHA, Geneva - Support Programme for the participation of representatives from developing countries in international conventions (climate change, biodiversity, desertification, chemical conventions) - Farm Forestry Project (FFP), Pakistan - The ProBosques, Guatemala (Helvetas) - The Jekasy, Mali and PASOLAC, Central America (Intercooperation) - The Extension and Training Support for Forestry and Agriculture in the Uplands - ETSP, Viet Nam - Tool-kit of the CDE on gender analysis in land use management
Provide assets (poverty dimension of lack of assets and opportunities)	- Economic valuation at macro-economic level - Policy support to pro-poor WTO negotiations - Research on food security and genetic resources in the frame of the support of the CGIAR	- Economic valuation and local negotiation for the provision of environmental services - Access to market and development of commercialisation - Development of global strategies of livelihood	
Provide security (poverty dimension of vulnerability)	- Integrated risk management - Prevention of natural disasters	- Risk analysis and management and local livelihood - Integrated insurance approach	- Ukrainian Forest Development Project (FORZA) in Zakarpattia, Ukraine - SAHA (Sahan'Asa Hampandrosoana ny Ambanivohitra) in Madagascar (Intercooperation)
Provide capability (poverty dimension of lack of capability)	- Initiative of ICT for Development for access to information	- Food security as a comprehensive concept for rural development - Integrated water management with provision of food for people and for food - Provide capacity for cleaner production	- SDC concept on food security - SDC strategy on integrated water management - Project on cleaner production in small-scale mining in Latin America

5.4 Research in poverty-environment

Two areas of research are considered because they are particularly representative of Swiss commitment to NRM and poverty in research. The Centre for Development and Environment of the Institute of Geography, University of Bern (CDE) has supported SDC in conceptualising the linkages between poverty and environment. It has been active for more than two decades on research in land and soil conservation (www.cde.unibe.ch). CDE is the focal point of the National Centre of Competence in Research North South (NCCR) programme, a coalition of the main universities and institutions active in research on development issues. The NCCR is a regrouping of research partnerships for mitigating syndromes of global change. Research will capture the main current research issues in cooperation and development.

5.4.1 Research on "natural resource management for poverty alleviation"

The research of the CDE on the concept of NRM[112] is based on the main assumption that NRM is a key strategy for poverty alleviation. The concept is currently updated by integrating new elements coming from the NCCR North-South project.

The following assumptions are used by the CDE to begin research projects:

- The culturally shaped perceptions of nature and society – so-called "cosmo-visions" – are strongly influencing the long-term oriented behaviour of local actors. They configure the endogenous potentials for development.
- The local context is also strongly influenced by external forces related to national and international policies, effects of global change as expressed in climate change, flows of tourism and migration, etc. Local actors, through short-term oriented adaptations of their livelihood systems, tackle these external factors.
- The combination of long-term socio-economic and socio-cultural strategies and short-term subsistence strategies lead to a broad diversification of the strategies of local societies.
- A livelihood approach implies that external support is congruent with the local existing multi-strategies of families.
- The point of departure of an analysis is the social and cultural institutions at the level of the local societies.
- "Styles of farming" is applied as an approach that can help classify farms according to their level of integration in the market and their technological status and to identify farm types that are particularly ecologically and socially sustainable. The different types of farming are the following: industrial farming, traditional marginalized farming, pioneer farms in modernisation, traditional sustainable farming.

Two cases are exhibited to show poverty-environment linkages. The point of departure of the project interventions is the multi-strategies of the local actors (small farmers).

[112] *"Natural resource management and poverty alleviation", 9.4.1999.*

Case study 1: Soil conservation in the Bolivian Andes

The first case study is an AGRUCO project on soil conservation techniques. Terraced production was disseminated in a process self-induced by the local families. The norm of the existing reciprocal cooperation forms – the "Ayni" – was used in the working groups. It was a vehicle for the dissemination of the soil conservation practices in crop production. In a self-induced process, production in terraces was diversified towards labour-intensive vegetable production. This process was based on the reciprocal cooperation form "al partir", consisting of a temporary exchange of working forces between rich and poor families that is profitable for both parties. The work in Ayni groups was a motor to develop more rational production patterns for crop production and to generate gains in labour costs. At the same time, it was realized that labour-intensive conservation practices could be undertaken due to the availability of work force. A law that could force peasants to leave unsustainably used land also motivated the families to apply conservation practices. Economical as well as social gains in the form of increased solidarity have been acknowledged.

Case study 2: Multi-strategies of small farmers, social networks and sustainable water management in Laikipia, Kenya

The development of the water provision was organized in the region of Laikipia, northwest Kenya. The population increased in that zone due to immigration from a densely populated area. The multi-strategies of the small farmers have been taken into consideration in the development of a regional water provision scheme. This was essential because the available water resources were not sufficient to cover the irrigation needs. Therefore, water needs were prioritised. First, drinking water needs were considered. Second, the need for livestock was considered. Third place was occupied by the irrigation of fields. As a consequence of the prioritisation process, a focus was placed on livestock and not on crop production and the irrigation needs of the biggest fields. This allowed an optimal distribution of ecologically restricted resources. Strategies of minimal soil use can reduce water consumption but these were not successful because they require more labour force. It became obvious that technologies for improved water management had not been accepted. Instead, preference was given to labour extensive ecological innovations. Practices of agroforestry or landscape organization, for instance the planting of trees with multiple functions (fodder, energy, medicine, etc.) was preferred.

The main findings of the research are the following:

- NRM can be the starting point of a short-term as well as a long-term PRS.
- Poor families pursue a long-term objective to maintain ecological and social fundamentals besides the short-term orientation of their livelihoods.
- Small farming families prefer multi-strategies with the aim of reducing overall risk exposure and efficient use of financial, natural and energetic resources to ensure profitability.
- Integration in the market and technological modernisation are not the determining factors for the types of farming but are elements of the context.
- Traditional sustainable farming relies on endogenous natural resources and counts on additional resources such as social nets of reciprocity or non-market regulated trade.

- Investments in conservation are important for NRM and poverty alleviation and are mainly determined by social and cultural considerations.
- Research shows that priority is often given to conservation investments like the maintenance of terraces and the agroforestry systems and biodiversity in seeds and not to productive investments like machines, fodder and pesticides.
- Research in soil conservation shows that implementation of soil conservation measures depends to a great extent on technology and management alternatives and is independent from macroeconomic measures.
- Low market integration is not equal to low production potential but means that a significant part of the resources are produced on-farm. It is the high re-use of natural resources that has a positive low cost effect on the sustainability of the system.
- Scale-oriented production based on external technology can be substituted by increasing artisan skills, social competencies and knowledge of the actors allowing quality-oriented production to be undertaken.

5.4.2 Gender in poverty-environment research

It is worth highlighting the development of the tool-kit on "Tackling Gender Issues in Sustainable Land management"[113] by the CDE. The tool-kit can be used for policy and project development by people who are active in rural development. The instrument is also based on experience from projects in India, Nicaragua and Kenya. It provides tools in modular form on different issues such as access to land or tackling conflicts on land management issues from a gender perspective. The tools are realized for practical decision-making.

A new activity is currently being developed on "Engendering Biodiversity Projects" that focuses on gender, poverty alleviation and biodiversity by the CDE. Research and consultancy services are defined in the frame of the CDE gender group.

5.4.3 New research on poverty-environment

Poverty in the different Individual Projects (IPs) of the NCCR

Eight individual projects are concerned:

1. conceptual framework and methodologies for syndrome mitigation
2. natural resources and ecology
3. water, environmental sanitation and urban agriculture
4. health and social well-being
5. social practices and empowerment in urban societies
6. institutional change and livelihood strategies
7. environmental change and conflict transformation
8. governance, human development and environment.

Each IP is responsible for the coordination of activities in a given partner region. There are eight joint areas of case studies including contributions to transversal topics.

[113] *CDE, Cordula Ott, 2002 (publication and CD-Rom).*

Cross-sectional themes such as decentralisation, gender, people and protected areas are aiming to systematise relevant research projects and results from the global network, addressing specific concerns expressed in the titles of the working groups.

The poverty-environment link is not yet established as a cross-sectional topic/theme. However this does not mean that issues related to it are absent.

The NCCR platform on people and protected areas

The platform is organized as a crosscutting learning instrument. A first meeting was held in April 2004, in which the following main lessons were identified:

- people-oriented considerations of protected areas imply the need to tackle the economic situation of populations and their economic activity, e.g. gold-mining, fishing, producing charcoal, practicing agriculture, and especially their specific economic needs (training, technologies, market access, eventually viable economic alternatives)
- working with poor populations in or around protected areas means that work on aspects of informal and illegal activities must be included; the strategy on how to be an accepted partner in the negotiation with the population has to be thoroughly defined
- incentives are often needed to make development options economically attractive.

Another platform relevant for the poverty-environment links is the one working on "Decentralisation, social movements and natural resources". The platform aims to systematise the lessons learned and research results in highly diverse contexts, emphasising local governments, their relation with local institutional environments and NRM. The impacts on poverty reduction will be considered as well.

Selected poverty-environment issues

A screening of research posters was undertaken in order to highlight common work themes in poverty-environment. The screening was made on the basis of the "Overview of Research within the NCCR North-South by 31 March 2004" which presents some 120 projects on a single page/poster.

IPs 1, 6, 7 and 8 in particular provide interesting insights into poverty-NRM linkages[114]. IP 1 aims at concretising syndrome mitigation. The three integrative research topics of IP 6 Livelihood Strategies and Institutional Change are very relevant to poverty-environment linkages. They are the following: (1) effects of globalization on rural and rural-urban livelihoods, (2) participation through decentralisation in NRM as a mitigation strategy, (3) people and protected areas. IP 7 contributes to clarifying poverty-environment linkages in the security dimension by identifying pathways to conflict mitigation. IP 8 explores governance.

The main cluster issues of research by the NCCR related to poverty-environment are presented in Table 5.2.

[114] *IP 2 focuses on correlations between global sets of data and information on problems related to natural resources in semi-arid and highland-lowland syndrome contexts; IP 3 on environmental sanitation has a particular emphasis on the urban and peri-urban poor, so does IP 4.*

Table 5.2 Main cluster issues of research by the NCCR related to poverty-environment

Main thematic research clusters	Key issues for poverty-environment
Social learning and indigenous knowledge in syndrome mitigation	- Learning on local societies - Understanding of indigenous values and governance questions - Poverty mapping
Decentralisation and local livelihoods	- Interactions between global conservation and local interests - Participatory approaches for decentralisation - Globalization and the development of local markets and income at local level
Property rights	- Discussion of different property forms - Property rights and ethnic questions - The use of land mapping and cadastres
Empowerment and the role of NGOs	- Empowerment of local groups - The role of women in land management and market development - Indigenous identity - The role of NGOs as driving forces in global conservation issues
Vulnerability to conflicts and natural disasters	- Conflict mitigation - Social aspects of natural risks
Health	- Health and poverty - Sanitation aspects - Poverty-related diseases

Social learning and indigenous knowledge in syndrome mitigation

The research has a strong focus on soil and water conservation. The following aspect of the poverty-environment linkages is salient: the **learning on local societies**, their visions and livelihood strategies in order to improve syndrome mitigation strategies and development planning[115]. Several studies focus on the management of the Tunari National Park in Bolivia and show how a combination of **understanding of indigenous values and of governance questions** can contribute to ecosystem biodiversity protection[116].

An important point of this area of work is the **use of geographical information systems (GIS) and ICTs** as instruments in syndrome mitigation and environmental protection analysis. In one study, these instruments are directly used to better understand the geographical linkages between poverty and environment. The CDE's study on "Spatial poverty traps: aspects of rural poverty in Viet Nam" quotes that "a spatial perspective in poverty analysis provides a better understanding of the interrelations between poverty dimensions and biophysical and socio-economic aspects". In Viet Nam, research shows that poverty is primarily centred on geographically and structurally marginalized areas. Poverty rates are highest in the remote upland areas and poverty densities are highest in the highly populated delta and coastal lowland areas. There are important geographic variations in poverty-environment relationships.

Decentralisation and local livelihoods

Research by the Nepal group on "Nature conservation and local livelihoods in Nepal, Department of Geography, University of Zurich" explores the local interests of human welfare and the global interest in **sustainable nature conservation** and their linkages and trade-offs. The study proposes, among other things, insurance for farmers' losses. Another study by the University of Zurich on "Balancing Conservation and Livelihood Needs in Protected Areas, Nepal" aims at providing results, based on a survey in the Kangchenjunga Conservation Area, able to influence conservation projects in general. Initial results show

[115] *Research on "Syndrome mitigation as a societal learning process in Bolivia, the Swiss Alps and India" of the CDE; "Understanding Peasants for Sustainable Development Planning, in semi-arid contexts" of the CDE.*

[116] *(1) Ecosystem Biodiversity: The Vision of Andean Indigenous Farmers (CDE): a presentation and classification of the visions of Andean Indigenous farmers as a basis for intercultural dialogue and as part of a sustainable management strategy; (2) Transformation of values at the social interfaces of the National Park, the underlying diversity of competing discourses on territory and biodiversity among local and external actors; (3) Governance and management of biodiversity highlighting the potential of local community-based and municipal government and trying to avoid the inconsistent legal norms of local institutions.*

the need for participatory conservation, the importance of a long-term approach and the predominance of external factors such as national conflicts (e.g. the Maoist movement) over project interventions.

Several research papers address the questions of **participation** and devolution of power in northwest Pakistan. The nature of these processes is critically analysed. In the forest sector, it was recognized that most reforms are donor driven and that state reforms are of a temporary nature.

One aspect that is particularly heavily investigated is the linkage of **globalization** and local development. Research tries to highlight the importance of decentralisation and participation at the local level. Actually, little research deals with market approaches within the interface between local livelihoods and NRM. One research project in India analyses the diversification strategies of rubber smallholders in an agro-ecologically marginal area in Kerala, as a response to the liberalisation of the Indian natural rubber sector[117].

Property rights

Research on land tenure is not related between the different IPs, although several IPs conduct research on it.

The IP 6 Livelihood Strategies and Institutional Change tackles "**common property resources** (CPR)" in several studies. The study "Institutions for the management of common property resources" (Department of Social Anthropology, University of Zurich) compares CPR in Cameroon and Tanzania floodplains. Initial results show, among other things, that ethnic conflicts over resources are arising, or are threatening to arise in the future, because of the dismantling of local institutions that lead to open access to CPR. Stakeholders' interests and the role of the state have to be clarified. The research projects of the University of Yaoundé on "Common Property Institutions and Power Relations: Logone Floodplain", "Common Property Institutions and Power Relations: Rufiji, Tanzania" and "Common Property Institutions and Power Relations in Pangani Basin, Tanzania" (University of Dar es Salaam) demonstrate that the weakening of CPR management in Cameroon, Chad and Tanzania contributes to threatening livelihoods. Because of state control and other global changes there is a situation of de facto open access. Local people use superstition to regain control over CPR. There is a lack of means to implement state policy at the local level and a lack of adequate institutions at the local level.

The results of IP 8 are generally **critical about the implications of common management systems** and decentralised resource management by local communities. The research on "Land Governance and its Conservation in Peru: The Amarakeari Case Study" presumes that the new normative system of the Communal Amarakeari Reserve provides new opportunities of access to land but weakens the objective of conserving biodiversity. In the research project on "Deforestation and Customary Law in Madagascar" the results reveal that international aid donors promote common pool resources because they are expected to contribute to social and environmental justice but they do not correspond to a local social demand. The reason is that the high environmental costs are not internalised although they could be covered by fiscal incentives by the local state to mitigate deforestation.

IP 7 relates the question of **property rights and the ethnic aspects**. One study on the Nuba Mountains Region of Sudan, "Land, Class and Ethnicity in the Nuba Mountains region of Sudan" (Department of Political Science of the University of Khartoum), investigates the interrelation between class, ethnicity and land ownership in the region. The expected outcome of conflict resolution and land-redistribution is sustainable livelihoods in the region. The study elaborates on recommendations regarding the potential and threats of land-redistribution and resettlement of displaced people. A land-use map of the area will be established. Another work will gain insight into the titling of indigenous rights in Asia. The research on "Conflict Transformation through the Titling of Indigenous Territories" (University of Zurich) analyses the potential of mapping and titling of indigenous territories for conflict mitigation between competing resource user-groups in marginal state regions based on the case of the Mindanao Uplands in the Philippines.

[117] *"Diversification Strategies of Rubber Smallholders in Kerala, South India", Development Study Group, University of Zurich.*

Empowerment and the role of NGOs

IP 8 provides interesting elements on aspects of security and empowerment as key elements of the poverty-environment nexus.

Empowerment is considered in the thematic issues dealing with **indigenous citizenship** and knowledge and the role of local institutions. Results from this area of research tend to find ways of overcoming the current regulations that do not sufficiently take into account indigenous knowledge.

The analysis of the role of NGOs both at local and global level in the frame of biodiversity governance is a very central question in order to assess **the influence of NGOs** on the implementation of the Convention on Biodiversity and specifically on the issues of access to genetic resources.

Vulnerability to conflicts and natural disasters

IP 7 contributes to clarifying poverty-environment linkages in the security dimension by identifying pathways to **conflict mitigation**. The IP is coordinated by Swisspeace. It deals with conflict over land and water, especially in frontier areas and for shared river waters. The aim is to develop conflict-sensitive research methods and conflict transformation methods such as dialogue workshops and negotiation round tables. For instance the research "Water and regional security in Northeastern Africa" aims at understanding the concept of regional security with a proposal to develop bilateral or multilateral conventions for transboundary resources, based on the positive experience of the Nile Basin Initiative.

Security is also the key focus in research on the social regulations of natural risks in IP 8. Research on "The Social Regulation of Urban Natural Risks in Bolivia" (IUED) attempts to understand the **social aspects of natural risks**, in particular floods and landslides in two Bolivian cities. It does not focus on specific poverty aspects, but results show that risk perception and risk management are socially differentiated and highlight the specific difficulties of people with less political power in drawing attention to their situation.

Other thematic issues

Environmental health and **urban** issues have not been considered in the clustering and screening.

5.5 The role of IUCN and proposals for further investigation and cooperation

Several experts from different research and implementation organizations consider IUCN as an organization well suited to being active at the policy level. IUCN could be the main advocate of indigenous populations and marginalized groups in their path to sustainable development. IUCN could also take up the issues that need more investigation in order to provide implementation frameworks, such as the conditions necessary for markets for pro-poor environmental services and products. IUCN should also undertake further research and carry out negotiations in order to ensure the applicability of solutions; and it should collect and disseminate best practices, such as those on the question of property rights.

5.5.1 Proposed areas of work

The following areas of work have been suggested:

1. ***Policy dialogue***. Proposals include: advocacy for indigenous populations (often poor) living in preserved but threatened areas; promotion of the certification systems for wood and non-wood products for sustainable management which are affordable and reliable; development of international mechanisms to compensate for biodiversity and resource conservation/protection, especially north-south, from developed to underdeveloped and marginalized regions; and establishing institutionalised global mechanisms.

2. ***Integrated approach.*** Analysing the clustering of approaches comprising, among others: sustainable land use; sustainable agriculture and forestry; integrated chemicals management (e.g. links between protection of biological diversity, provision of environmental services and capacity building of laboratories in the monitoring and modelling of pollution emissions; or enhancing clustering and linkages between different conventions (CITES, RAMSAR, CBD).
3. ***Market approaches***. Analysis of the parameters and the frame for accessing markets, creating markets and applying economic instruments so that people can benefit from natural resources without undermining the resource base.
4. ***Access to property***. Analysis of the use of different property schemes and their conditions.
5. ***Selection of key thematic issues***. New insights have to be gained on food and income security and on new social insurance schemes (covering risks affecting the productive sphere and the natural resources).
6. ***Instruments for information exchange and efficient funding***. Study and help making operational instruments like project databases and clearing mechanisms.

5.5.2 Summary matrix of possible interactions between Swiss organizations and IUCN

In order to be more active on the issue of the interrelations between poverty and the environment, the institutions and issues presented in this section could be considered.

In Table 5.3 some issues and arrangements are proposed in order to establish mechanisms for learning and knowledge sharing on poverty-environment.

Table 5.3 Issues and possible institutional arrangements for learning and knowledge sharing on poverty-environment

Organization / area	Issues to be tackled	Possible institutional arrangements
CDE, Bern / research	Gender and biodiversity and gender and land use management	- Regular learning process on gender and biodiversity - Integration of CDE gender expert in IUCN knowledge management processes on gender–poverty and environment - Possible valorisation of the tool-kit ”Tackling Gender Issues in Sustainable Land Management" through IUCN and application for IUCN supported projects
	The concept of NRM	Exchange on the basis of the CDE Paper on NRM
	Payment and compensation for environmental services in the frame of the management of forest and water interrelations	Exchange of experience in the frame of a workshop on the topic of environmental services
NCCR / Research	Establishment of priority topics such as land tenure and decentralisation	Participation of NCCR contact point in a learning task force of IUCN
Intercooperation / implementing NGO	Provision for environmental services	- Event and regular exchange in a task force on environmental services - Possible mutual learning mechanism e.g. on environmental services, local livelihoods and poverty
SDC / development	- Social development: health, water and sanitation - Governance: PRSPs, land tenure, rule of law - Natural resource and environment: protected areas and poverty, biodiversity, forests and poverty, mountains and poverty, watershed management and poverty, natural disasters, food security, benefit sharing and genetic resources - Knowledge management: learning processes and knowledge sharing	Regular contacts with Social development section (SoDev), Governance section, NRU section and Knowledge management section

Key organizations wish to establish a targeted and long-term exchange and knowledge sharing process on poverty-environment with IUCN. The dialogue and cooperation should be thematically focussed. Possible topics that might be of common interest are the decentralisation processes, the issue of property rights and gender issues. A long-term process of mutual learning will be established between IUCN and selected organizations in research and implementation.

Potentially interested partners encourage IUCN to take the initiative in establishing a learning platform that could meet about twice a year and would function on the basis of mutually agreed terms of reference for a long-term process of knowledge sharing.

Annex 5A: Lessons from environmental management in artisanal mining in Ecuador, Peru and Bolivia

The goal of the projects (implemented by Projekt-Consult GmbH) is the mitigation of pollution through environmental management in small-scale mining.

Development of project implementation in Ecuador and Bolivia

Environmental projects in the field of small-scale mining started in Ecuador in 1993 with the support of SDC.

In the south of **Ecuador**, a regional environmental management plan has been developed for the area of Portovelo-Zaruma. In order to gain the confidence of the miners' communities, the project started with basic advice on mining techniques, good housekeeping and worker's safety measures. Some low-cost technologies for mitigating mercury and other chemicals like cyanide have been developed and applied in a comprehensive cleaner production approach. The project aimed at reducing the use of mercury and other chemicals and emissions into the air and water. The technological development has been based on mutual learning and on adaptation of traditional practices. The project has great significance because of the pollution of the southern trans-frontier river basin through mining activities. Some impacts on pollution reduction and health have been measured with the support of the Canadian International Development Agency (CIDA). The project results have been put in the light of the negotiation of a biodiversity protection project in the transboundary area between Ecuador and Peru. Nevertheless, mining activities are a small economic sector in Ecuador and this fact did not motivate the central authorities to prioritise the issue.

In 1994, the project started in **Bolivia**, where almost 200,000 families live from artisanal gold mining all over the country. The project has been successful in applying the eco-efficient technologies. Contractual agreements have been signed by the newly founded MEDMIN Foundation for the provision of advice and technology development services in the mining sector. The impact of the project is significant. Nevertheless, the legal aspects have not been tackled and the fact that mining activities remain temporary (depending on the international gold price) or informal was a limiting factor for effective entrepreneurial development of the cooperatives. The project has gained the support of the central authorities but has not yet been sufficiently included in the decentralisation efforts of the country. The strong advocacy and dissemination of practices contributed to investigating possibilities of addressing the whole jewellery production chain and analysing the potential of "fair trade gold" or "eco-gold". An international alliance has even been built with NGOs working on precious stones in other regions of the world for the commercialisation of labelled "conflict-free fair trade jewellery" on European and US markets.

There has been some learning on several issues. First of all, even though mining activities are illegal and contested, it became obvious that the situation could not be reversed and that a new project in Peru would encourage eco-efficiency in some ecologically fragile areas. Second, the informal character of artisanal mining is a limiting factor because there is a marginalization of miners' communities and there are conflicts over resources (such as water resources or land). This situation contributes to the bad image of miner's communities in Peruvian society. The third issue is that miners' families are living in communities without any basic infrastructure such as water and sanitation or basic education, because communities have been built in a spontaneous and informal way. Living and working conditions are very hard and child labour is widely spread. Finally, although artisanal mining often generates more income than agriculture, the income basis is uncertain. New and diversified activities had to be found for women in order to increase family income (horticulture, services), but also to compensate for the elimination of abusive workloads, especially for women and children.

Set-up of the project in Peru

Based on the lessons from Ecuador and Bolivia, a new project started in **Peru** in 2001 with direct interventions in the regions of Puno and the Sur-Medio. The project GAMA (Gestion Ambiental en la Mineria Artesanal) was conceived as an environmental project with a broad holistic focus. From the beginning, lines of action for social development, health improvement and formalisation have been included. The project does not aim to implement basic infrastructures but to play a catalytic role for investment in basic infrastructure and community development. The frame has been favourable in that there are several Peruvian NGOs working on social aspects of mining communities (social development, basic education, alternatives to child labour).

The four components of the first phase (2000-2002) are the following[118]:

1. Legal component and work on land tenure and formalisation.
2. Technological component: technological transfer from Ecuador and Peru and new technological adaptations and working practices, especially to ease the workload of women and children.
3. Health component: work on environmental health aspects.
4. Social component: social community development.

For the sake of prioritisation, the environmental health component has not been developed. Instead, the legal component became very prominent. The actions were eased due to the fact that the MEM-Ministry of Energy and Mining had already addressed small-scale mining in creating a special unit for it. The project developed policy dialogue activities in order to achieve the adoption of a **Law of promotion and formalisation of artisanal mining** in 2003. The Law of formalisation was a basis to address land tenure schemes. It also helped to improve the image of "artisanal miners" in society and to consider them as an officially recognized profession. The Law is also a basis for conflict mitigation and mediation in situations of unclear property rights. The policy dialogue has been based on the work of the miners associations. Miners associations have been strengthened through the activities of the project.

The overall aim of Phase 2 is the empowerment of the artisanal mining sector through business management and environmental management. Based on the new Law of formalisation and the development of environmental protection activities, phase two (2003-2005) prioritises the three following lines of action:

1. Capacity building among the regional administrations that have been assigned responsibilities for mineral sector management by the decentralisation of the Peruvian Government.
2. Entrepreneurial development of miners' organizations and associations (including marketing and business management); this line of action also focuses on decentralisation and the strengthening of local institutions (especially the regional governments). The project offers comprehensive advice and consulting services comprising negotiation with clients and legal aspects of the formalisation.
3. Further technical development.

Main lessons of the projects

- A clear overall objective of reducing pollution can be a good entry point for synergies between poverty alleviation and environmental protection.
- The elaboration of regional environmental plans was preferred to a case-by-case approach.
- The need to work on cadastres and the need for advice on legal/proprietary aspects is a starting point, due to unclear and controversial property conditions.

[118] *See the Annual Operational Plans of the GAMA project under www.gama-peru.org.*

- Organizational strengthening is a basis for tackling conflict prevention and land use patterns.
- Policy dialogue and advocacy targeted at improving the “image” of the artisanal mining sector and at global formalisation of the profession was a success factor for the adoption of the Law of formalisation of small-scale mining in Peru.
- Market considerations such as fair trade and labelling were only introduced at a later stage; clear property rights and strengthened organizations are improving conditions for introducing labelling.
- The local market and the productive sphere are very dependent on international policy and the price of gold (e.g. temporary workers).
- Although raw gold production is carried out according to certain social and environmental criteria, it is difficult to upgrade/organize the whole market chain for labelling because it involves other types of actors that have to follow minimal quality and eco-social standards (refiners, designers), but there is a potential to increase income through the opening of new channels, both for “niche strategies” such as jewellery and mainstreaming eco-gold for other uses.
- Further work could be carried out in order to formulate reduction and impact targets and to quantify impacts on poverty and environment; “win-win” strategies and benefits have to be documented and disseminated.

Conclusion/recommendation for IUCN

IUCN might be interested in the lessons of this project (work in some protected areas, land tenure, market creation) and possible conclusions for other economic sectors.

Annex 5B: Main issues on the Swiss support in Africa in the frame of the Convention on Desertification

Main messages

- There has not yet been any thematic clustering of activities to combat desertification.
- In many cases, effective NRM and poverty reduction is achieved through the reinforcement of productive activities (diversification of production, access to markets).
- Reinforcement of the productive basis in order to fight poverty and protect natural resources at the same time is often implemented through capacity building, training and empowerment of professional organizations.
- Many poverty-environment initiatives are implemented in a context of active support of decentralisation initiatives; therefore, the opportunity of the political will is taken into account and the empowerment of local institutions becomes an important part of the programme.
- Agricultural and environmental research (e.g. on new seeds and crops) is an important element of poverty reduction and NRM strategies.
- Many Swiss organizations are involved in combating desertification, protecting natural resources and fighting poverty.
- The organizations of the CGIAR make a substantial contribution to poverty-environment linkages.

Conclusion/recommendation for IUCN

- Some more analytical work should be done on focal areas of the desertification convention and on the links between conservation and desertification.
- A general analysis of the benefits of working under the umbrella of a convention and of having institutionalised mechanisms for the protection of the environment (including of clearing mechanisms and project databases) could be an opportunity to arrive at conclusions for conservation and protected areas.

Annex 5C: Listing of contacts

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