The Millennium Development Goals and Conservation

Managing Nature's Wealth for Society's Health

Edited by Dilys Roe

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The Global Challenge: Goals and targets

The Millennium Development Goals are an ambitious agenda for reducing poverty and improving lives that world leaders agreed on at the Millennium Summit in September 2000. For each goal one or more targets have been set, most for 2015, using 1990 as a benchmark.

1. Eradicate extreme poverty and hunger

Target for 2015: Halve the proportion of people living on less than a dollar a day and those who suffer from hunger.

2. Achieve universal primary education

Target for 2015: Ensure that all boys and girls complete primary school.

3. Promote gender equality and empower women

Targets for 2005 and 2015: Eliminate gender disparities in primary and secondary education preferably by 2005, and at all levels by 2015.

4. Reduce child mortality

Target for 2015: Reduce by two-thirds the mortality rate among children under five.

5. Improve maternal health

Target for 2015: Reduce by three-quarters the ratio of women dying in childbirth.

6. Combat HIV/AIDS, malaria and other diseases

Target for 2015: Halt and begin to reverse the spread of HIV/AIDS and the incidence of malaria and other major diseases.

7. Ensure environmental sustainability

Targets:

- Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources.
- By 2015, reduce by half the proportion of people without access to safe drinking water.
- By 2020 achieve significant improvement in the lives of at least 100 million slum dwellers.

8. Develop a global partnership for development

Targets:

- Develop further an open trading and financial system that includes a commitment to good governance, development and poverty reduction – nationally and internationally.
- Address the least developed countries' special needs, and the special needs of landlocked and small island developing States.
- Deal comprehensively with developing countries' debt problems.
- Develop decent and productive work for youth.
- In co-operation with pharmaceutical companies, provide access to affordable essential drugs in developing countries.
- In co-operation with the private sector, make available the benefits of new technologies – especially information and communications technologies.

Contents

Foreword

Shoji Nishimoto, Assistant Administrator and Director, Bureau for Development Policy, United Nations Development Programme (UNDP)

The search for paths to an environmentally sustainable future is more urgent than ever before. The developing world has shown that progress is possible, and on terms that respect the social and cultural norms of diverse peoples and places. This can, in part, be attributed to a growing recognition that conservation and development are often inherently compatible and mutually supporting goals.

Local, indigenous, and resource-dependent communities are showing that great gains can be made when livelihoods and environmental needs are viewed together. The growing successes that local people – and their NGO, governmental and United Nations partners – have had in these areas indicate that the silos and divisions that once separated the conservation and development communities are breaking down. Local and global actors are jointly engaged in a coherent and collaborative attack on poverty that recognizes the interconnectedness of environmental sustainability and poverty issues: the effort to achieve the Millennium Development Goals (MDGs).

The MDGs range from halving extreme poverty to halting the spread of HIV/AIDS, and providing universal primary education to ensuring environmental sustainability –all by the target date of

2015. Moreover the MDGs have unprecedented political backing: never before have such concrete goals been formally endorsed by rich and poor countries, and never before have the United Nations, World Bank, International Monetary Fund and the international system come together behind the same development agenda.

Historically, the role of biodiversity and natural resources in underpinning key development issues was often overlooked, with dire consequences. Far from being a luxury, biodiversity and ecosystem services – such as the provision of clean water, the maintenance of soil fertility, protection from floods, and the regulation of disease – are essential to the well-being and livelihoods of the poor. The poor, with the greatest direct dependence on the natural world, bear the brunt of environmental degradation, species loss, and pollution. Biodiversity, whether privately or commonly held, has global benefits. By working with all those who manage biodiversity to promote conservation and sustainable use, the entire global family can reap rewards.

This book – with its focus on the interface between poverty and the environment – reminds us that achieving the MDGs will require a genuinely integrated approach to conservation and development, which recognizes intact ecosystems as a basic human need. It also highlights that communities and local partnerships are a vital driving force for sustainable development. Continued success towards the full achievement of the MDGs will require that we learn from innovative and diverse experiences at all levels and think and act across disciplines and approaches.

This volume is a valuable contribution to the effort to bridge conservation and development issues and address the challenge of sustainable development as a unified whole. The importance of this work resides in its ability to outline the challenges that face us while also illuminating promising solutions. Collaborative, culturally relevant, and locally informed experience must be the bedrock of our shared global effort to achieve sustainable development and improve the human condition.

The Millennium Development Goals and Conservation: Summary

1. LINKING CONSERVATION AND POVERTY REDUCTION

The Millennium Development Goals (MDGs) set 48 targets, to be achieved by 2015. Four years after the Millennium Declaration – from which the MDGs are derived – the United Nations has reported significant progress in many regions of the world and against many of the targets. Progress in some regions of the world – particularly in sub-Saharan Africa – and against some of the targets – child and maternal mortality and access to improved sanitation – has been slow however, and in some cases is worsening. Getting back on track and making progress world-wide against the full set of goals and targets by 2015 is clearly going to require significant extra effort, from conventional and

non-conventional sources. Can conservation play a role in this effort?

Despite the close interlinkages between conservation and poverty reduction there is still considerable polarisation between the conservation and development communities. On the one hand, because the goods and services generated by natural resources are generally unaccounted for in national statistics, development agencies have often undervalued the potential role they can play in poverty reduction – as evidenced by the decreasing emphasis on environment in the project portfolios of many donors and the limited integration of natural resource and environmental issues into national poverty reduction strategies. On the other hand many conservation organisations have been unimpressed with the results of initiatives such as community-based conservation and integrated conservation and development projects (ICDPs) and have viewed poverty concerns as outside their core business.

Not only is poverty reduction an international imperative, but addressing poverty concerns is critical for long term conservation success

That poverty reduction is not the role of conservation organisations can be countered with both moral and practical arguments: not only is poverty reduction an international imperative, but addressing poverty concerns is critical for long term conservation success. However, the lack of attention to biodiversity in poverty reduction strategies and the apparent lack of awareness amongst development practitioners and policy-makers of the potential contribution that biodiversity conservation does and can make to poverty reduction and the achievement of the MDGs is of increasing concern.

Maximising the contribution of conservation to achieving the full spectrum of MDGs – particularly those where progress is lagging – requires efforts by both conservation and development communities to:

- Enhance awareness amongst development agencies as to the importance of conservation – not least because of the real contribution that biodiversity can make to poverty reduction and other development objectives.

- Acknowledge and build on the comparative advantage that biodiversity offers to many poor countries, exploiting opportunities for income generation and enterprise development.
- Shift the focus of international conservation policy from one that appears to focus primarily on rare and endangered species and the extension of protected areas, towards one that also emphasises the development values of biodiversity and landscape management approaches that can deliver both conservation and development benefits.
- Acknowledge the opportunity that community-centred biodiversity conservation offers to re-examine rights-based approaches to natural resource management and to support strengthened local governance and decision-making.
- Integrate environmental concerns into poverty reduction activities – and vice versa – so that international goals and targets such as the MDGs and the CBD are mutually reinforcing.

2. BIODIVERSITY BENEFITS

Human Health

Human health is dependent on biodiversity and on the natural functioning of healthy ecosystems. Biodiversity supports human life and promotes health by providing essential ecosystem services – pollution control, soil fertility, water management and so on – as well as by providing medicines from plants, animals, and microbes on land, in lakes and rivers, and in the oceans and models for medical research that help us understand human physiology and disease. The relationship of biodiversity to human health has relevance to all eight Millennium Development Goals (MDGs), but it has special and fundamental importance for goals 1, 4, 5, 6, and 7. It also has particular relevance in some of the world's poorest countries where diseases such as HIV/AIDS and malaria have reached crisis point and

Environmental concerns should be Integrated into poverty reduction activities – and vice versa – so that international goals and targets such as the MDGs and the CBD are mutually reinforcing

where other treatable and preventable diseases such as sleeping sickness and bilharzia are endemic.

Separating health goals from other environment and development goals reinforces the widely held misconception that human beings are separate from the environments in which they live. People will not do what is necessary to protect the global environment until they begin to understand the risks that disruptions to physical, chemical, and biological systems present to themselves and to their children. There is no more effective way to help them achieve this understanding than to frame discussions about development and the environment in the concrete, personal terms of human health.

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Climate Change

Biodiversity is inextricably linked to climate – changes in climate, and efforts to mitigate climate change, affect biodiversity and changes to natural ecosystems affect climate. Hence biodiversity conservation can be an effective mitigation mechanism. Given the dependency of the poor on biodiversity resources, any impact that climate change has on natural systems threatens the livelihoods, food intake and health of poor people. Climate change is not sufficiently dealt with in the MDGs – it is part of MDG7 but the indicators are limited and the emphasis is on mitigation rather than adaptation. Far greater attention also needs to be paid to the role of local processes – the use of biodiversity as a risk aversion strategy and a way to reduce vulnerability of climate change shocks, improved trade and aid mechanisms (as implied in MDG8), support for local initiatives of ecosystem management and restoration activities that sustain and diversify local livelihoods.

Markets for Ecosystem Services

There is growing interest in market-based approaches to conserving ecosystem services. The basic concept is to create positive economic incentives for land managers to behave in ways that increase, or at least maintain, certain environmental functions. These include, among others:

- The sequestration of carbon in biomass or soils;
- The provision of habitat for endangered species;
- The protection and maintenance of landscapes that people find attractive (such as cloud forest in Costa Rica, the veld in Southern Africa or the patchwork of hedgerows, cropland and woodland typical of southern England); and
- A catch-all category of 'watershed protection' which involves various hydrological functions related to the quality, quantity or timing of fresh water flows from upstream areas to downstream users.

While the primary goal of these market initiatives has been environmental, the commitment to the MDGs raises the question as to whether these new markets for ecosystem services can also help reduce poverty. In this respect, the most obvious benefit of market initiatives is the potential to bring new sources of cash income to previously marginalised communities. But just as the formulation of the MDGs reflects a view that poverty is multi-dimensional, so it is important to look beyond cash income and consider how market initiatives affect other dimensions of poverty. For example, the improvement of natural resource management resulting from the use of such mechanisms may bring benefits in the form of improved nutrition for those who depend on wild foods. Similarly, the urban poor may benefit from improved access to safe drinking water and reduced risk of floods, as a result of payments for watershed protection upstream.

Just as the formulation of the MDGs reflects a view that poverty is multi-dimensional, so it is important to look beyond cash income and consider how market initiatives affect other dimensions of poverty

With respect to the impacts of market-based incentives for ecosystem services on the poor, we can take some comfort from an overall increase in transfers from richer segments of the economy to less affluent segments. On the other hand, there is reason to worry that the truly poor may find themselves unable to participate as suppliers of ecosystem services, displaced from their jobs, and cut off from natural resources that they previously exploited (either sustainably or otherwise). In addition, the poor are not only potential

suppliers of ecosystem services but also consumers. If a new payment scheme involves transfers from beneficiaries or users of ecosystem services to providers, some relatively poor users might end up paying money they can ill-afford to some relatively well-off providers. Extra care must therefore be taken to ensure that poverty is not exacerbated by such initiatives and, if possible, to assist the poor to participate actively as suppliers. The first priority here is to facilitate access by small landholders to existing or new payment schemes and then to ensure they are able to sustain their involvement and derive net benefits on a long-term basis.

Different perspectives can result in major tensions between North and South, between policy-makers and 'policy-takers' and their reconciliation requires a range of tools and strategies to negotiate trade-offs and to identify and build on synergies

3. MAXIMISING THE POTENTIAL OF BIODIVERSITY CONSERVATION: KEY CHALLENGES

Reconciling Global and Local Priorities

While conservation clearly has huge potential to contribute to achieving the MDGs, major challenges need to be tackled if this potential is to be realised. A fundamental question to address is what we actually mean when we talk about conservation. To many in the North, conservation means preserving rare or endangered species and habitats so that we, and our children, may continue to enjoy them for generations to come. For those that actually live near, and depend upon, biodiversity in the South, the priority is to conserve those species that provide direct benefits such as food, medicines, fuel or that have cultural or spiritual significance. Distinctions between domesticated and wild species are also less meaningful to many Southern rural communities, who farm forest gardens or gather food widely, than to the Northern architects of international conservation policy. These different perspectives can result in major tensions between North and South, between policy-makers and 'policy-takers' and their reconciliation requires a range of tools and strategies to negotiate trade-offs and to identify and build on synergies.

Tools, however, are not enough. Many conservation initiatives engage locally on the assumption that they are

dealing with local people with legitimate rights to the ownership and control of their natural resources – while in fact the broader frameworks that might legitimise those rights are entirely lacking. Tactical tools are of little value without higher-level strategies to strengthen governance, particularly at national levels. These are long-term goals: many who rally for equity in conservation decision-making would argue that solutions lie outside the 'sector' in much bigger issues of how society can shape governments and markets.

People-centred conservation does not mean that the agendas of poor people must override the role of conservation in other key social aspirations such as environmental sustainability. But it does mean that the trade-offs and commonalities between local goals and global goals, between goals of conservation and goals of development, need to be given greater – and more incisive – attention than has been the case in the past so that differences in perceptions and priorities can be turned from a problem into an asset.

Many who rally for equity in conservation decision-making would argue that solutions lie outside the 'sector' in much bigger issues of how society can shape governments and markets

Taking a Strategic Approach

One way forward is to adopt an 'ecosystem approach' to conservation planning – as advocated by the Convention on Biological Diversity. This recognises that ecosystems must be managed as a whole, with protected areas serving as reservoirs of wild biodiversity in a 'matrix' of land that is managed to enhance its habitat value, while also providing a range of benefits to people such as food supply and income for ecosystem services. Within this integrated strategy, agricultural lands need to be managed as part of the matrix surrounding protected areas, while the protected areas are managed as part of the matrix surrounding agricultural lands. The approach draws on multiple interest groups within society and relies on local management institutions as far as possible.

'Ecoagriculture' builds on this concept and refers to land-use systems that are managed to simultaneously achieve

improved livelihoods, conserve biodiversity, and enhance sustainable production at a landscape scale. For ecoagriculture, enhancing rural livelihoods through more productive and profitable farming systems becomes a core strategy for both agricultural development and conservation of biodiversity.

A programme for sustainable landscape management that includes biodiversity conservation needs to include both firm governmental action and alliances with the other stakeholders. National governments cannot delegate their role of guarantors of the conservation of a country's natural heritage, so the appropriate authorities need to build the capacity to fulfil their regulatory and management duties and responsibilities. But civil society can share certain rights and responsibilities regarding the management of living natural resources after careful preparation and an adequate definition of roles and responsibilities. Given the interests of NGOs, business, indigenous peoples, and local communities who live within or close to protected areas, alliances should be created among stakeholders that enable each to play an appropriate role according to clear government policies and laws.

All businesses have some form of impact on biodiversity – whether directly through their operations or indirectly along the supply chain through pollution or resource use

Enhancing the Role of the Private Sector

The private sector is only one of this set of key stakeholders. However many businesses operate in ways that have fundamental negative impacts on biodiversity – through sourcing of raw materials for production and consumption, management of company landholdings and through release of environmental pollution such as green house gas emissions. Food processors, forestry and paper, mining, oil and gas, utilities, electricity, pharmaceuticals and biotechnology and tobacco companies are the sectors with the greatest impacts on biodiversity, but all businesses have some form of impact – whether directly through their operations or indirectly along the supply chain through pollution or resource use. The lack of a clearly understood link between corporate and natural value has meant that business has been slow to understand that there are both threats and opportunities posed by mismanagement of

biodiversity and have often seen the issue of biodiversity management as a governmental or societal responsibility.

Nevertheless, there are now a number of initiatives amongst large and small companies that are beginning to address the issue of biodiversity loss. Much of the focus of NGOs and investors to date has been on the biodiversity impacts and management practices of big business. However, small- and medium- sized enterprises (SMEs) are major contributors to both income generation and resource use in much of the world and thus have the potential to significantly impact on, and influence, biodiversity. Indeed, many consider that the path to biodiversity-aware development lies with removing the barriers faced by SMEs rather than focusing on big business.

Given the far-ranging impact of the private sector in terms of development, social equity and environmental impacts, business is surely a key sector to catalyse into action

The Millennium Development Goals have surprisingly little direct reference to business given that more than half the flow of aid from developed to developing countries is from private sources. Given the far-ranging impact of the private sector in terms of development, social equity and environmental impacts, business is surely a key sector to catalyse into action. Links to biodiversity conservation can be made within Goal 7: *Ensuring environmental sustainability* although the associated indicators mean very little in terms of the impact and performance of industry with regards to biodiversity management. Similarly, whilst Goal 8 refers to the need to develop an 'open, rule based, predictable, non-discriminatory trading and financial system' which includes a commitment to 'governance, development and poverty reduction' it fails to acknowledge the need to adjust current financing methods to factor in environmental and social risks and opportunities and therefore appropriately value investments. This misses a fundamental lever for change in corporate behaviour.

Overall such initiatives and processes remain obscure to business and, as a significant global force for development and potentially for conservation, excluding business is a major omission. There is an urgent need, therefore, for the governors of these processes to consider how business –

large and small – can be drawn into these discussions and appropriate safeguards set up to ensure that their level of influence is appropriate.

Scaling Up Local-level Success

There is now a growing sense that the MDGs will only be achieved with the full participation of local people, and the scaling-up of the many individual initiatives that have managed to link conservation and development successfully is one area where it is hoped that progress towards the MDGs might make great headway. However, little discussion has occurred around what types of scaling-up might be best suited to advance the MDG agenda or how desired levels of scaling-up might be achieved. Any effort to scale-up successful community initiatives is likely to produce some positive movement towards the MDGs. However, since the MDGs are measured broadly – at the national level and according to relatively coarse measures – some types of scaling-up are likely to contribute more to the MDG effort than others.

By striving to reduce and eliminate the vacuum in which community initiatives operate and by working to create fertile ground for new endeavours, political scaling-up will be vital to the success of the MDG agenda and a necessary precursor to significant gains achieved through other forms of scaling-up

The most intuitive and commonly-held understanding of the term scaling-up relates to the simple replication of projects and activities – this is quantitative scaling-up. However, the simple replication of community initiatives alone will be insufficient to achieve the MDGs since, to have maximum impact, this replicative process cannot be undertaken in a vacuum. For this reason, the most important form of scaling-up is likely to be political scaling-up. By striving to reduce and eliminate the vacuum in which community initiatives operate and by working to create fertile ground for new endeavours, political scaling-up will be vital to the success of the MDG agenda and a necessary precursor to significant gains achieved through other forms of scaling-up.

Political scaling-up is especially important to the MDG effort since it allows for a unique form of expansion. It facilitates the growth of community initiatives by building a power base for addressing the underlying causes of

underdevelopment. Instead of simply providing and replicating services, political scaling-up allows communities to engage in political and social efforts to combat sources of poverty and environmental degradation at the most comprehensive level. This not only furthers immediate goals, but also helps achieve wider results by gaining support for local action from political actors and policy-makers. Political scaling-up is also extremely important because of the connection between local scaling-up and national political action – both of which are required to create an enabling environment for achievement of the MDGs.

An important role, then, for conservation and development agencies will be to assist community initiatives in overcoming the challenges associated with this form of scaling-up, forging links to policy-makers and the political process in ways that minimise risk and interference with the delivery of essential short-term deliverables.

For biodiversity conservation to contribute fully to poverty reduction and the MDGs, a fundamental shift is needed to more systemic and people-centred approaches that build on poor people's priorities and capabilities

Mainstreaming Conservation into Development Policy and Planning

For biodiversity conservation to contribute fully to poverty reduction and the MDGs, a fundamental shift is needed to more systemic and people-centred approaches that build on poor people's priorities and capabilities; that effectively engage all stakeholders in addressing the underlying policy and institutional drivers of environmental degradation; and that empower poor and vulnerable groups with the assets, rights, and entitlements they need to improve their lives through sound environmental management. Meeting this challenge calls for a new approach and broad-based commitment to integrating the environmental concerns of poor and vulnerable groups into mainstream development processes at global, national, and local levels.

The key to success lies within country-led mechanisms to set, measure, and achieve country-specific environmental sustainability targets that draw on and harmonise targets in existing development frameworks and strategies, including poverty reduction strategies, macroeconomic and sectoral

It is vital to assist developing countries in their efforts to set, measure, and achieve country-specific MDG targets linking environmental sustainability and poverty reduction

policies, and the budget process. This integration will make it possible to forge a broad-based, more co-ordinated response to poverty-environment challenges, to achieve synergies between diverse interventions across many sectors and levels of action, and to ensure that adequate domestic and external resources are being allocated and effectively targeted. Given the multi-dimensional nature of biodiversity-poverty links, this entails a broad agenda for policy and institutional change across many sectors and levels of action.

Among the most important of these actions are to:

- Identify local win-win solutions—such as ecoagriculture, new markets for biodiversity-friendly products, and innovative financing mechanisms such as direct payments to farmers for maintaining ecosystem services—that simultaneously protect biodiversity and maintain critical ecosystem services while also reducing poverty;
- Strengthen global strategies and frameworks so that they adequately support country-led mechanisms to take advantage of such win-win solutions and to scale-up successful local-level processes;
- Assist developing countries in their efforts to set, measure, and achieve country-specific MDG targets linking environmental sustainability and poverty reduction;
- Encourage linkages between, and harmonisation of, environmental targets, indicators and interventions developed within country-led MDG processes with mainstream national development frameworks and strategies, especially national poverty reduction strategies and the PRSP process;
- Engage with line ministries, including finance ministries and other agencies overseeing mainstream development planning, to address barriers to integrating environmental sustainability into national development and poverty reduction frameworks, strategies, and programmes;
- Create a more enabling policy and institutional

environment for mainstreaming of biodiversity-poverty links through improved governance, including an expanded role for civil society in environmental management;

- Reform trade-distorting policies that undermine the livelihoods of developing-country farmers, and build the capacity of poor farmers in developing countries to meet trade-related environmental standards that stimulate demand for biodiversity-friendly products commanding premium prices in world markets.

4. MOVING FORWARD

No strategy to achieve the MDGs can afford to overlook the role of biodiversity. However, the separation of environment into one of eight development goals is one of the weaknesses of the MDGs as a framework for poverty reduction and sustainable development. The very nature of sustainable development emphasises the integration of its three pillars – economics, society and environment – and this implies a need not just to focus on one goal in order to achieve environmental sustainability but to examine how environment – and natural resource management – can be integrated across the set of goals (and equally to consider how progress towards the other goals might impact on environmental sustainability).

Another weakness in the current MDG framework and process is the marginal consideration given to environmental sustainability and biodiversity conservation in the targets and indicators for MDG 8 ('*Develop a Global Partnership for Development*'). Possibly more than any of the other goals, MDG 8 – particularly the targets related to aid and trade – could have considerable adverse impacts on biodiversity. Environmental sustainability needs to be integrated into these targets, and associated indicators should measure the extent to which changes in official development assistance and trade arrangements either support or harm the biological resource base.

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The UN MDG +5 Review in 2005 provides a major opportunity to mobilise greater international support and to forge more effective partnerships for moving the poverty-environment agenda forward in a more integrated and focused manner than in the past. The challenge is firstly to resolve the environment versus development dichotomy and secondly, to find practical ways and means to attain direly needed economic development but *importantly not at the expense of environmental sustainability*. By identifying practical ways forward and capacity building requirements, we hope this booklet goes some way to addressing this challenge.

Introduction

This booklet is the second in a series of three publications on the Millennium Development Goals (MDGs) (see http://www.meetingthemdgs.org/pubs.html#booklet for the first in the series on *The MDGs and Local Processes*). This second book focuses on the links between the MDGs and conservation and is timed to coincide with the IUCN World Conservation Congress which has as its theme, *People and Nature, Only One World*.

Natural resources play a major and very often critical role in the livelihoods of a high proportion of the world's population, providing a wide range of goods (food, fuel, fodder, medicines, building materials) and services (watersheds, carbon sequestration, soil fertility, spiritual and cultural well-being) as

well as opportunities for income generation through jobs and small enterprises (in forestry, tourism, wildlife trade and so on). Moreover, numerous studies have found that it is often the poorest people and households that are most dependent on these resources.

This dependency brings with it a theoretically strong incentive to conserve but in practice, given the weak access and tenure rights of many poor people, there is a also strong potential for local over-exploitation. Moreover, it means that the impacts arising from the loss of natural resources and ecosystem services fall most heavily on the poor – even though the cause of degradation may lie with richer or more powerful groups.

Because the goods and services generated by natural resources are generally unaccounted for in national statistics, development agencies have often undervalued the potential role they can play in poverty reduction

Despite the close interlinkages between conservation and poverty reduction there is still considerable polarisation between the conservation and development communities. On the one hand, because the goods and services generated by natural resources are generally unaccounted for in national statistics, development agencies have often undervalued the potential role they can play in poverty reduction – as evidenced by the decreasing emphasis on environment in the project portfolios of many donors and the limited integration of natural resource and environmental issues into national poverty reduction strategies. On the other hand many conservation organisations have been unimpressed with the results of initiatives such as community-based conservation and integrated conservation and development projects (ICDPs) and have viewed poverty concerns as outside their core business.

Do the MDGs provide an appropriate framework for reconciling this divide? Biodiversity and natural resource conservation is directly addressed in MDG7 – *Ensure Environmental Sustainability*. This includes a target to 'Integrate the principles of sustainable development in country policies and programmes and reverse the loss of environmental resources.' Of the seven indicators for

MDG7, two specifically address conservation: first, the proportion of land area covered by forest, and second, the ratio of area protected to maintain biological diversity to surface area. However, in this book we argue that conservation has a role to play in achieving many of the other MDGs.

The physical location of much of the world's biodiversity in the South provides some of the poorest countries with a comparative advantage on which they can capitalise – through tourism, biodiversity-based enterprise, markets for ecosystem services and so on. This may prove particularly significant for the countries of sub-Saharan Africa where progress towards the MDGs has proved difficult. The links between biodiversity conservation and human health are also becoming increasingly well recognised – not just for the direct contribution natural products make to traditional and modern medicines, but also because of the role of other species in biomedical research and as vectors or regulators of disease. Here too, Africa in particular may benefit from biodiversity given its contribution to HIV/AIDS, malaria and other treatable and preventable diseases that prevail there.

Given the dependency of the poor on biodiversity resources, any impact that climate change has on natural systems threatens the livelihoods, food intake and health of poor people

Yet none of these efforts to tackle poverty will be worthwhile if we overlook the challenge of climate change. Biodiversity is inextricably linked to climate – changes in climate affect biodiversity and changes to natural ecosystems affect climate. Given the dependency of the poor on biodiversity resources, any impact that climate change has on natural systems threatens the livelihoods, food intake and health of poor people. The role of biodiversity conservation as a tool to both mitigate, and adapt to, climate change is one that requires much greater recognition.

Despite the clear potential that conservation has to address many aspects of poverty, major challenges need to be tackled if this potential is to be realised. How can local level, or small-scale success stories be 'scaled-up' so that progress can be seen at the national and international level? How can the private sector be effectively engaged so that it minimises the impact it has on biological resources and facilitates the

growth of pro-biodiversity enterprises that generate benefits for the poor?

A fundamental question to address is what we actually mean when we talk about conservation. To many in the North, conservation means preserving rare or endangered species and habitats so that we, and our children, may continue to enjoy them for generations to come. For those that actually live near, and depend upon, biodiversity in the South, the priority is to conserve those species that provide direct benefits such as food, medicines, fuel or that have cultural or spiritual significance. Distinctions between domesticated and wild species are also less meaningful to many Southern rural communities, who farm forest gardens or gather food widely, than to the Northern architects of international conservation policy. These different perspectives can result in major tensions between North and South, between policy-makers and 'policy-takers' and their reconciliation requires a range of tools and strategies to negotiate trade-offs and to identify and build on synergies.

Distinctions between domesticated and wild species are also less meaningful to many Southern rural communities, who farm forest gardens or gather food widely, than to the Northern architects of international conservation policy

One way forward is to adopt an 'ecosystem approach' to conservation planning – as advocated by the Convention on Biological Diversity. This recognises that ecosystems must be managed as a whole, with protected areas serving as reservoirs of wild biodiversity in a 'matrix' of land that is managed to enhance its habitat value, while also providing a range of benefits to people such as food supply and income for ecosystem services. Within this integrated strategy, agricultural lands need to be managed as part of the matrix surrounding protected areas, while the protected areas are managed as part of the matrix surrounding agricultural lands. The approach draws on multiple interest groups within society and relies on local management institutions as far as possible. 'Ecoagriculture' builds on this concept and refers to land-use systems that are managed to simultaneously achieve improved livelihoods, conserve biodiversity, and enhance sustainable production at a landscape scale. For ecoagriculture, enhancing rural livelihoods through more productive and profitable farming

systems becomes a core strategy for both agricultural development and conservation of biodiversity.

No strategy to achieve the MDGs can afford to overlook the role of biodiversity. However, the separation of environment into one of eight development goals is one of the weaknesses of the MDGs as a framework for poverty reduction and sustainable development. The very nature of sustainable development emphasises the integration of its three pillars – economics, society and environment – and this thus implies a need not just to focus on one goal in order to achieve environmental sustainability but to examine how environment – and natural resource management – can be *integrated across the set of goals* (and equally to consider how progress towards the other goals might impact on environmental sustainability). The challenge is firstly to resolve the environment versus development dichotomy and secondly, to find practical ways and means to attain direly needed economic development *but importantly not at the expense of environmental sustainability*. By identifying practical ways forward and capacity building requirements, we hope this booklet goes some way to addressing this challenge.

1

Meeting the MDGs – Is Conservation Relevant?

Dilys Roe, IIED and Joanna Elliott, UK Department for International Development

Achieving the goal of liberating half the world's poor from their poverty by 2015 will either mark the true beginning of sustainability or the end of biodiversity at the hands of best-intentioned policies.[1]

1. INTRODUCTION: COUNTDOWN TO 2015

The Millennium Development Goals (MDGs) set 18 targets, to be achieved by 2015. Four years after the Millennium Declaration – from which the MDGs are derived – the United Nations has reported significant progress in many regions of the world and against many of the targets. The UN Secretary General's report of August 27th 2004 notes the following achievements:[2]

- 200 million fewer people in Asia living on less than $1/day than in 1990;

1. Sanderson, S. and K. Redford (2003). 'Contested relationships between biodiversity conservation and poverty reduction'. *Oryx*, 37, pp 389-390
2. *Implementing the Millennium Declaration* United Nations Press Release, 7 September 2004. http://www.un.org/millenniumgoals/mdg_pr_09_2004.pdf

- Significant progress in reducing poverty levels in North Africa;
- Primary schools nearing the target of universal enrolment by 2015 in most of Asia, Latin America and the Caribbean, North Africa, and the Commonwealth of Independent States;
- Hunger receding in all regions of the world – although not at a rate sufficient to meet the 2015 target of a reduction by half in all regions;
- Broad improvement in access to improved water sources.

The UN report notes, however, that progress in some regions of the world – particularly in sub-Saharan Africa – and against some of the targets – child and maternal mortality and access to improved sanitation – has been slow, and in some cases is worsening. Getting back on track and making progress world-wide against the full set of goals and targets by 2015 is clearly going to require significant extra effort, from conventional and non-conventional sources. Can conservation play a role in this effort? This chapter investigates the arguments for and against linking conservation and development, and examines the potential role that biodiversity could play in meeting the MDGs – particularly in Africa.

Getting back on track and making progress world-wide against the full set of goals and targets by 2015 is clearly going to require significant extra effort, from conventional and non-conventional sources. Can conservation play a role in this effort?

2. THE UNLINKING OF CONSERVATION AND DEVELOPMENT

The relationship between conservation and development has been debated for decades by policy makers and practitioners alike. During the early 1980s, the global conservation paradigm of protectionism and human exclusion based on national parks and other protected areas that had prevailed since the late 19th century was gradually displaced by a new narrative – one that advocated community participation in, and benefits from, wildlife management. In 1980 IUCN published its *World*

2. ***Implementing the Millennium Declaration op.cit.***

Conservation Strategy that stressed the importance of linking protected area management with the economic activities of local communities. In 1985 the World Wildlife Fund launched its *Wildlife and Human Needs Programme*, consisting of some 20 projects in developing countries that attempted to combine conservation and development, and in 1986 the World Bank's policy on wildlands recognised that the protection of natural areas must be integrated into regional economic planning.

As a result, in Africa in the 1980s some now well-known projects and programmes based on participatory approaches to wildlife management were initiated, providing inspiration and models for similar initiatives around the world. It is important to note, however, that the focus of these initiatives was not solely the conservation of species and habitats. As important, if not more so, was the need for community development, local self-government and the creation of local institutions for the management of common property resources – all priorities of the development assistance community.

The Rio summit emphasised three equally important objectives: conservation, sustainable use of biodiversity resources and fair and equitable sharing of benefits with local people, thus placing community involvement in wildlife conservation and management firmly on the international agenda

Subsequently, the Convention on Biological Diversity (CBD), which arose out of the 1992 UN Conference on Environment and Development in Rio de Janeiro, emphasised three equally important objectives: conservation, sustainable use of biodiversity resources and fair and equitable sharing of benefits with local people, thus placing community involvement in wildlife conservation and management firmly on the international agenda.

In recent years, however, two parallel trends appear to have driven a wedge between the seemingly happy union of conservation and development. First, there has been growing disenchantment with community-based conservation and so-called Integrated Conservation and Development Projects (ICDPs)[3] coupled with increasing

3. This disenchantment arose not just from conservation organisations but also from donor agencies – for example the DFID *Wildlife and Poverty Study* (DFID 2002) points out that donors have grown increasingly concerned about high transaction costs, relatively low levels of financial benefits and apparent non-replicability of community based wildlife management projects.

advocacy for a return to more protectionist approaches to conservation.[4] In some instances the renewed emphasis on traditional/protectionist approaches to conservation has taken a new form. There is a growing emphasis on direct payments for conservation benefits: for example, the concept of 'conservation concessions' has been pioneered by Conservation International, whereby payments are made to a developing country government or, in some cases, to indigenous/community groups in return for a long-term lease on a tract of land. The implications of this type of approach for the livelihoods of poor people are complex – an issue explored in greater detail in Chapter 4 of this volume.

Second, the way in which development assistance is designed and implemented has changed significantly. Until the mid- to late-1990s, donors provided much development aid in the form of project funding and supported the dominant paradigms of the day – those centred on devolution, decentralisation and local participation and those that emphasised the 'triple bottom line' of sustainable development. Biodiversity conservation fell within the environmental responsibilities of donors committed to sustainable development, and was once a significant part of the project portfolios of many international development agencies. Community-based conservation went a step further, enabling donors to meet both environmental and participatory objectives.

In 1999, the World Bank launched a new framework for development assistance – the Comprehensive Development Framework, coupled with national poverty reduction strategies – emphasising developing country ownership and direction of the development agenda

In 1996, the OECD published its report *Shaping the 21st Century* which included a set of International Development Targets – the precursor to the Millennium Development Goals – and emphasised poverty reduction, rather than sustainable development, as the overriding objective of development assistance. In 1999, the World Bank launched a new framework for development assistance – the Comprehensive Development Framework, coupled with national poverty reduction strategies (PRSs) – emphasising developing country ownership and direction of the

4. Terborgh, J. (1999). *Requiem for Nature*. Island Press, Washington DC. Spinage, C. (1998). 'Social change and conservation misrepresentation in Africa.' *Oryx* 32(4): 265-276. Bruner. A.G. *et al.* (2001). 'Effectiveness of parks in protecting tropical biodiversity' *Science*, Vol.291, 5 January 2001,125-128

development agenda. Many development agencies thus shifted their funding away from projects to direct budgetary support (DBS) and, rather than driving the agenda according to their own priorities, responded to those priorities articulated in individual PRSs. The UK Department for International Development (DFID) for example, recognises that once a partner country qualifies for DBS, channelling a significant proportion of its bilateral aid through this mechanism directly addresses the urgent need to empower national governments to direct and prioritise their own poverty reduction processes, and creates strong incentives for good governance.

Biodiversity conservation has dropped down the agenda of both donors and developing country governments because it has not been identified as a priority for poverty reduction by either

This combination of factors has meant that both biodiversity conservation, and direct donor support for local processes, have become increasingly marginalised in mainstream development. Biodiversity conservation has dropped down the agenda of both donors and developing country governments because it has not been identified as a priority for poverty reduction by either. In part this is due to the fact that despite the particularly high dependency of poor people on biodiversity and other natural resources, environmental goods and services are generally unaccounted for in national statistics and thus not reflected as priorities in national policies[5] (see Chapter 9 in this volume for a detailed analysis of efforts to mainstream environment at the national and international level). Indeed, environmental issues in general have received little attention in the majority of PRSs.[6] Local processes have suffered as donors increasingly do business directly with government offices, which may, or may not, support local participation in planning, decision-making and implementation. David Satterthwaite provides an analysis of the mismatch between current patterns of aid allocation and community-driven processes in the first volume of this series[7] noting 'The national governments with whom [external funding

5. DFID (2002). *Wildlife and Poverty Study* Department for International Development, London
6. Bojö, J and Reddy, R.C. (2002). *Poverty Reduction Strategies and Environment* Environment Department Paper no 86, World Bank, Washington DC for a review of the treatment of environmental issues in PRSPs and DFID (2002). *op.cit.* for a preliminary review of biodiversity in PRSPs.
7. Satterthwaite, D (ed.) (2003). *The Millennium Development Goals and Local Processes: Hitting the Target or Missing the Point* IIED, London.

agencies] work often do not want development assistance allocated to these processes, or at least they want to manage the allocation of such resources and influence who gets them (and who does not).'

3. FROM DEVELOPMENT TO POVERTY REDUCTION

The Millennium Development Goals (MDGs), reaffirm the poverty reduction imperative, subsuming the OECD targets and, indeed, many other development targets set by the United Nations over the last thirty years.[8] A big difference, however, is the fact that many governments, donors and international organisations have made public commitments to achieving the MDGs and have encouraged other sectors of the international community to do the same. As a result, the conservation-development debate has, in recent years, been couched in terms of conservation and poverty reduction or 'pro-poor conservation'.

Proponents of pro-poor conservation argue that linking conservation and poverty reduction makes sense for both objectives, but sceptics, from both conservation and development organisations, fail to see the relevance of each other's agenda

Regardless of the terminology, huge divisions remain. Proponents of pro-poor conservation argue that linking conservation and poverty reduction makes sense for both objectives, but sceptics, from both conservation and development organisations, fail to see the relevance of each other's agenda.

A recent article in *Oryx*, an international conservation journal, by Steve Sanderson and Kent Redford of the US-based Wildlife Conservation Society, typifies the position of many conservation practitioners. Their first argument is that poverty reduction is not the role of conservation organisations – if current patterns of development have failed the world's poor, how – and why – should conservationists even begin to tackle the problem?[9] Protected areas, it is argued, struggle to pay for themselves, let alone to generate benefits for local communities. The second argument is that the mantra of poverty reduction has supplanted that of sustainable development, and the

8. Satterthwaite, D (2003). *op.cit*
9. Sanderson and Redford (2003). *op.cit*

environmental considerations that implies – with negative consequences for biodiversity conservation. The MDGs, it is argued, may well signal the end for biodiversity.

That poverty reduction is not the role of conservation organisations can be countered with both moral and practical arguments: not only is poverty reduction an international imperative, but addressing poverty concerns is critical for long term conservation success. Poverty is multi-dimensional and includes a lack of power and rights as well as physical assets. While the close dependence of poor people on biodiversity brings with it a theoretically strong incentive to conserve natural resources weak access and tenure rights of many poor people mean there is a strong potential for local over-exploitation. As a recent study by DFID notes: 'Much conservation money is still invested with only limited consideration of poverty and livelihoods concerns, despite a growing consensus that poverty and weak governance are two of the most significant underlying threats to conservation'.[10]

Poverty is multi-dimensional and includes a lack of power and rights as well as physical assets

The second argument – that poverty reduction strategies, including the MDGs, have failed adequately to address biodiversity conservation concerns – is more difficult to counter. The lack of attention, not just to biodiversity, but to environmental issues in general, has been increasingly recognised, and Chapter 9 of this volume describes attempts by UNDP and other international organisations to address this. As worrying is the apparent lack of awareness amongst development practitioners and policy-makers of the potential contribution that biodiversity conservation does and can make to poverty reduction and the achievement of the MDGs.

4. ACHIEVING THE MDGS: WHAT ROLE FOR CONSERVATION?

Biodiversity conservation is directly addressed in MDG7 'Ensure Environmental Sustainability'. This includes a target

10. DFID (2002) *op.cit*

to 'Integrate the principles of sustainable development in country policies and programmes and reverse the loss of environmental resources.' Of the seven indicators for MDG7, two specifically address conservation: first, the proportion of land area covered by forest, and second, the ratio of area protected to maintain biological diversity to surface area. Clearly conservation has an important role to play in the goal of environmental sustainability. However, recent reviews by IIED, IUCN and others confirm that biodiversity also has a valuable role to play in achieving the other goals:[11]

- *Income (MDG1)*: In addition to safeguarding livelihood security through maintaining seed varieties and protected water and soil resources, the sustainable use of biodiverse wild resources helps directly to generate income through employment and enterprise opportunities such as forest and veld product derivatives and through nature tourism.
- *Hunger (MDG1)*: FAO has emphasised that there are close causal linkages between reducing hunger and the sustainable management of natural resources and ecosystems.[12] The Millennium Project Task Force on Hunger highlights the importance of improving core productive assets (soil, water, vegetation) as the first step towards tackling hunger. Sustainable food production systems rely on conserving and maintaining agricultural soils, fish stocks and habitats, water, genetic resources and ecological processes. IUCN notes that a large proportion of poor people live in marginal environments, fragile lands or areas of low agricultural productivity.[13] In these areas, wild foods can be particularly important – especially in terms of reducing the vulnerability of the poorest groups.

Sustainable food production systems rely on conserving and maintaining agricultural soils, fish stocks and habitats, water, genetic resources and ecological processes

11. See: Koziell, I and McNeill, C (2002). *Building on Hidden Opportunities to Achieve the Millennium Development Goals: Poverty Reduction through Conservation and Sustainable Use of Biodiversity.* WSSD Opinion Paper, IIED, London. Roe, D (2003). 'The MDGs and natural resources management: Reconciling sustainable livelihoods and resource conservation or fuelling a divide?' In D. Satterthwaite (ed) (2003). *op.cit*. Pisupati, B and E. Warner (2003) *Biodiversity and the Millennium Development Goals*. IUCN Regional Biodiversity Programme, Asia
12. http://www.fao.org/es/ESS/mdg_kit/contrib.asp
13. Pisupati and Warner (2003), *op.cit*

- *Gender and Education (MDGs 2 and 3)*: IUCN highlights the links between conservation and gender equality. Women and girls spend significant proportions of their day collecting firewood, water and other biological resources. Availability of (and, importantly, access to) these resources dictates the amount of time needed to perform household duties, which in turn impacts on the amount of time available for education, employment and so on. IUCN also notes the knock on effect that long journeys to collect fuel and water can have on health.[14]

- *Health (MDGs 4, 5 and 6)*: Natural resources underpin health care provision world wide. In many cases there is a direct reliance on wild resources as traditional medicines – WHO estimate that up to 80 per cent of the world population is dependent on these medicines.[15] This is particularly true of the poorest people who can't afford modern drugs and/or don't have access to clinics and doctors. In addition the majority of the world's modern drugs have their origin in natural products. Chapter 2 of this volume explores the links between biodiversity conservation and human health – particularly the role that biodiversity can play it addressing major illnesses that prevail in Africa more than anywhere else.

- *Water and sanitation (MDG 7)*: It is urban as well as rural populations that are dependent on the goods and services that biodiverse resources support. In addition to the direct benefits of food and other goods, conservation of areas such as water catchments, wetlands, swamps, forests and floodplains is vital to sustain delivery of ecosystem services that provide urban centres with services such as water supplies and flood control. In a presentation to an Equator Initiative meeting, Ian Douglas highlighted the use of constructed wetland technologies such as reedbeds as a mechanism for treating effluent in urban areas.[16] The Millennium Ecosystem Assessment

Conservation of areas such as water catchments, wetlands, swamps, forests and floodplains is vital to sustain delivery of ecosystem services that provide urban centres with services such as water supplies and flood control

14. Pisupati and Warner (2003), *ibid*
15. WHO, IUCN and WWF (1993). *Guidelines on the Conservation of Medicinal Plants*. IUCN, Gland
16. 'Water, sanitation, urban poverty and biodiversity.' Paper presented at the Equator Initiative meeting: *Biodiversity After Johannesburg*, London, March 2002

project will shortly be publishing reports of its investigation of links between biodiversity, ecosystem services and livelihoods, and the extensive scientific work done within the project is expected to help clarify the nature and extent of these linkages.

Mark Malloch Brown, UNDP Administrator, notes that the location of most of the world's biodiversity in some of the poorest countries presents the poor with an opportunity for local economic development.[17] Nowhere is this comparative advantage likely to be more important in meeting the MDGs than in Sub-Saharan Africa, where it is estimated that economic growth of at least 7 per cent per annum will be necessary.[18] Biodiversity-based enterprises have flourished in some parts of Africa including the capture and trade of live animals, trade in bushmeat, skins and other products, game ranching, hunting, medicinal plants and so on (Box 1.1). Any of these products offer potential growth opportunities where the markets, production opportunities and appropriate policy frameworks exist.[19] Markets for environmental services such as watershed protection – also offer an opportunity for rural communities to compete in the global economy,[20] an issue explored in Chapter 4.

The location of most of the world's biodiversity in some of the poorest countries presents the poor with an opportunity for local economic development

Tourism, (within which nature based tourism is a rapidly growing niche) is a likely source of a significant volume of investment and employment over the coming decade. Tourism is already a key economic sector in many African countries, making vital contributions to GDP, foreign exchange earnings, employment and enterprise opportunities. While some are sceptical of the fit between international tourism and poverty reduction, others are promoting 'pro-poor tourism' arguing that tourism is a great source of local economic development opportunity, given that it offers local employment and spin off business opportunities in poor and often remote areas and it can

17. Mark Malloch Brown on http://www.scidev.net/biodiversity
18. Ashley, C and Elliott, J (2003). *Just Wildlife? Or a Source of Local Development?* Natural Resource Perspectives No 85. Overseas Development Institute, London
19. Ashley and Elliott (2003). *op.cit.*
20. Mark Malloch Brown *op.cit.*

Box1.1: Income from Wild Resources in Sub-Saharan Africa

Cameroon: Cola nuts comprise between 5-37 per cent of households' cash income.
Ghana: The collection and sale of wild meat realises an income similar to that received by government employees.
Kenya: In the Arabuko-Sokoke Forest, hunters can earn US$275 per year by selling meat compared to an average per capita income in this area of US$38.
South Africa: Trade in medicinal plants in KwaZuluNatal is estimated to be worth R60 million per year, with the overall value of the trade in South Africa worth around R270 million (US$60 million) per year.
Zimbabwe: On average, wild resources comprise 35 per cent of total household incomes.

Source: Adapted from Roe, D, Mulliken, T, Milledge, S, Mosha, S, Mremi, J and Grieg-Gran , M (2002). *Making a Living or Making a Killing? Wildlife Trade, Trade Controls and Rural Livelihoods.* IIED and TRAFFIC, London and Cambridge

attract investment in infrastructure and local markets.[21]

Major concerns exist over security of land tenure, rights and access to natural resources, and known trade-offs between conservation and other livelihood opportunities (see for example Chapter 6 on conflicts between biodiversity and agriculture). Despite this, wildlife is clearly seen as an entrepreneurial asset by poor people – the challenge is to enable them to access a greater share of wildlife's potential development benefits.[22]

5. CONCLUSIONS

Is there really a choice between development and conservation? Is it not possible to imagine poverty reduction leading to a new commitment to providing the economic resources and political will necessary to conserve the global, national and local values of biodiversity? Much biodiversity conservation makes sound economic and political sense at national level – particularly where it is associated with the sustainable supply of ecosystem services and contributions to local and national economies (e.g. through tourism, forest products), though these links are often complex, hard to quantify and therefore poorly understood/reflected in policy processes. However, the emphasis placed by many conservation organisations on preservation of endangered

21. Ashley, C, Roe, D and Goodwin, H (2001). *Pro-poor Tourism Strategies: Making Tourism Work for the Poor.* IIED, ODI and ICRT, London. www.propoortourism.org.uk
22. Ashley and Elliott (2003) *op.cit.*

species, which tends to be the primary focus of northern interest in biodiversity conservation, is actually only one component of the linkages between conservation and development. As IUCN's Chief Scientist Jeff McNeely notes in Chapter 6: 'We need approaches to conserving biodiversity that recognise the dynamism of systems, the dependence of local people on their natural resources, and the need to build redundancy into our systems of protecting biodiversity.'

Maximising the contribution of conservation to achieving the full spectrum of MDGs – particularly those where progress is lagging – requires efforts by both conservation and development communities to:

- Enhance awareness amongst development agencies as to the importance of conservation – not least because of the real contribution that biodiversity can make to poverty reduction and other development objectives (see, for example, Chapters 2 and 3 on health and climate change respectively).
- Acknowledge and build on the comparative advantage that biodiversity offers to many poor countries, exploiting opportunities for income generation and enterprise development.
- Shift the focus of international conservation policy from one that appears to focus primarily on rare and endangered species and the extension of protected areas, towards one that also emphasises the development values of biodiversity and landscape management approaches that can deliver both conservation and development benefits, (See Chapter 6 on sustainable landscapes).
- Acknowledge the opportunity that community-centred biodiversity conservation offers to re-examine rights-based approaches to natural resource management and to support strengthened local governance and decision-making.
- Integrate environmental concerns into poverty reduction activities – and vice versa – so that international goals and

Maximising the contribution of conservation to achieving the full spectrum of MDGs – particularly those where progress is lagging – requires efforts by both conservation and development communities

targets such as the MDGs and the CBD – are mutually reinforcing (see Chapter 9 on mainstreaming poverty and environment).

We need to go down a path that recognises that for rural people living in poverty, development can't happen without the conservation of biodiversity. The real key to a sustainable future is to remember that our efforts towards poverty reduction and conservation are mutually reinforcing. In other words, our programmes should focus on 'biodiversity for development' not 'biodiversity or development.' [23]

23. Mark Malloch Brown *op.cit*

Case Study 1

Lessons from Tanzania on Mainstreaming Environment into the New Poverty Reduction Strategy[1]

Tanzania is developing its second poverty reduction strategy (PRS II) for implementation starting in 2005. This new PRS is very different from the first in that it is strongly outcome focused and has deliberately set out to mainstream cross-cutting issues, including environment, as integral to the strategy and not as an 'add on'. This was in response to a recognition by the Government of Tanzania, national stakeholders and development partners that environment, and other important cross-cutting issues were not well addressed in the first PRS, and that attention was essential to the achievement of sustainable poverty reduction and growth. A very important feature of the development of PRS II has been national ownership and the implementation of extensive consultation with a wide range of stakeholders on the content and focus of PRS II. The strategy also makes explicit mention of achieving WSSD actions, and is seen as a means to achieving sustainable development.

With this increased focus on cross-cutting issues – environment, HIV/AIDs, gender, employment, governance, children, youth, elderly, disabled and settlements – the challenge was how these should prioritised and how these should actually be mainstreamed into the PRS. Key questions to be answered were:

- What impacts do cross-cutting issues have on vulnerability, poverty reduction, economic growth, and achievement of the MDGs?
- What should be the priority cross-cutting issues for the new PRS, and what is the

1. Case study provide by David Howlett, Poverty Environment Adviser, Poverty Eradication Division, Vice President's Office, PO Box 9182, Dar es Salaam, Tanzania. david.howlett@undp.org

justification for their inclusion and contribution to the new PRS outcomes and targets?

- What policies and policy changes are required to address the cross-cutting issues?
- What actions on the ground are required to address cross-cutting issues, who should undertake them, what sectoral guidance is needed, and what co-ordination mechanisms and monitoring mechanisms are required?

MAINSTREAMING ACTIVITIES

To support the mainstreaming of environment the Government of Tanzania developed a programme in the Vice President's Office with UNDP.[2] This programme has three main elements:

- **Knowledge** – increased understanding on poverty-environment linkages. This has included studies on policy links on poverty-environment; the first public expenditure review on environment to establish the levels, trends and distribution of environmental expenditure and revenue; the potential use of Strategic Environment Assessment in poverty reduction in Tanzania; and, environment and vulnerability from the participatory poverty assessment.
- **Data** – use of environment/livelihoods data in the PRS and local level planning, to determine the impacts of policies and plans on poverty and environment issues. This has already included the addition of a preliminary set of poverty-environment indicators to the national poverty monitoring system. Linked to the new PRS a major study is underway to further refine this indicator set and to link this to routine data collection and reporting on the MDGs. To obtain a national baseline environment and livelihoods key questions were included in the 2003 agricultural survey, and these will be included in the environment module of the Tanzania Social Economic Database (TSED).
- **Capacity building** – at national and local levels better to address poverty-environment issues in interventions. This has included support to the development of the new Environmental Management Programme to protect environment and protect people's livelihoods; the establishment by Government of an Environment Working Group with broad membership with the aim to promote the integration of the environment into development policies; and plans to help ensure the sustainable use of natural resources for poverty reduction.

2. This programme is supported by Danida, DFID, the UNDP Poverty Environment Initiative, and the Royal Norwegian Government through UNDP Drylands Development Centre.

The Tanzanian Poverty Reduction Strategy: Clusters and Outcomes

Cluster 1: Growth and Reduction of Income Poverty
Broad outcomes:
- Broad based and equitable growth is achieved and sustained

Cluster 2: Quality of Life and Social Well-being
Broad outcomes:
- Quality of life and social well-being, with particular focus on the poorest and most vulnerable groups improved
- Inequalities in outcomes (e.g. education, survival, health) across geographic, income, age, gender and other groups reduced

Cluster 3: Governance and Accountability
Broad outcomes:
- Peace, political stability, national unity and social cohesion deepened
- Democracy and political and social tolerance
- Good governance and the rule of law
- Accountability of leaders and public servants

ENVIRONMENT AND THE NEW PRS

The focus of the mainstreaming efforts has been to develop interventions that will help achieve the goals and targets under three clusters of broad outcomes (see Box). This is a very important aspect of the mainstreaming process as it focuses thinking on how environment contributes to the PRS outcomes and goals rather than trying to get environment into the PRS for its own sake. For example Cluster 1 includes a goal of *promoting sustainable and broad-based growth* with a target to achieve GDP growth of 6-8 per cent by 2010. To achieve this the new PRS has interventions on the sustainable management of catchments to ensure water and energy services are provided for the economy and to support people's livelihoods. Another goal on *reducing income poverty of men and women in rural areas* includes interventions on increasing livelihood/employment from natural resource use, and a greater share of benefits from wildlife, forests and fisheries to local communities.

Under the second cluster the PRS has a specific environmental goal of *improving sanitation and shelter in urban/rural areas, and reduced environmental risk*. This has a target on reducing environmental pollution levels and on vulnerability from droughts and flooding under which there are strategies on pollution control and prevention, sanitation and solid waste management, and also on issues of desertification and drylands. Interventions on environmental pollution are also expected to make contributions to the second goal of a *reduction in infant, child and maternal mortality, morbidity and malnutrition*.

Importantly, environment interventions are also expected to make contributions to the achievement of goals under Cluster 3 on governance and accountability. For example, there will be interventions on access and control over environment and natural resources and reduction in corruption in natural resource sectors (e.g. illegal logging).

TEN STEPS TO SUCCESS

Tanzania is now making real progress on environment mainstreaming – although challenges still remain to implement the interventions defined by the new PRS and to develop operational guidance on environment mainstreaming at the local and sectoral levels. The ingredients to success in Tanzania are the strong recognition that environment matters and the development of ten practical steps to mainstreaming:

1. Strong national group of stakeholders to champion environment.
2. Increased awareness on why environmental issues are of crucial importance to poverty reduction and achievement of MDGs.
3. Greater understanding of, and increased analytical work on, the links between poverty and environment including the contribution of environment to growth, livelihoods, government revenue, and importance to achievement of many of the MDGs.
4. Establishment of a cross-sectoral forum to work on environment that is led by government.
5. Review and strategic assessment of policies, plans and programmes for impact on environment and poverty.
6. Assessment of the levels of public expenditure on environment against contributions to growth and poverty reduction, and policy objectives.
7. Integration of environment issues and appraisal into planning processes, particularly at the local level (village and district).
8. Integration of multi-lateral commitments and opportunities on environment (e.g. Climate Change Convention) into national policies and strategies
9. Strengthened environmental management capacity of government, non-government and private sector, and development of sectoral guidelines on mainstreaming
10. Inclusion of poverty-environment indicators in local and national monitoring systems – including the PRS.

2

Beyond Wildlife – Biodiversity and Human Health[1]

Eric Chivian, Harvard Medical School

Human health ultimately depends on the health of other species and on the healthy functioning of natural ecosystems.[2]

1. INTRODUCTION

The relationship of biodiversity to human health has relevance to all eight Millennium Development Goals (MDGs), but it has special and fundamental importance for goals 1, 4, 5, 6, and 7. This chapter provides a few case studies that illustrate these relationships, focusing on goals 4, 5, and 6. It should be said at the outset that while the need to divide the MDG's into distinct categories so that they may be more easily considered and studied is clear, we must also keep in mind that there are

1. The chapter has been adapted by the editor from a background paper prepared for the Equator Initiative meeting 'Biodiversity after Johannesburg' held in London, March 3-4, 2003
2. Chivian, E (ed) (2002). *Biodiversity: Its Importance to Human Health.* http://www.med.harvard.edu/chge/Biodiversity.screen.pdf

multiple interconnections and synergies between them that tend to be obscured by such distinctions. In particular, this applies to themes involving health, which affect, and are affected by, all the MDGs.

2. THE RELATIONSHIP OF HUMAN HEALTH TO BIODIVERSITY

Human health is dependent on biodiversity and on the natural functioning of healthy ecosystems. As IUCN's Chief Scientist, Jeff McNeely, notes:[3] 'To enhance these linkages [between biodiversity and human health] requires that we consider biodiversity and human health as different aspects of the same issue: that people are an integral part of Nature and must learn to live in balance with its other species and within its ecosystems.' Without a healthy population, a nation cannot hope to develop sustainably or to achieve true prosperity.

Without a healthy population, a nation cannot hope to develop sustainably or to achieve true prosperity

Biodiversity supports human life and promotes health by:

1. Providing, at the most basic level, ecosystem services that;

- ◆ filter toxic substances from air, water, and soil;
- ◆ protect against flooding, storm surges, and erosion;
- ◆ break down wastes and recycle nutrients;
- ◆ pollinate crops and wild plant species;
- ◆ create and maintain soil fertility;
- ◆ sequester carbon that mitigates global climate change;
- ◆ help maintain the water cycle and stabilise local climates;
- ◆ feed, clothe, and shelter us; and
- ◆ give us a host of other goods and services that support all life, including human life, on Earth.

2. Providing medicines from plants, animals, and microbes on land, in lakes and rivers, and in the oceans.

3. Chapter 7 'Policy Options' in Chivian, E (ed) (2002). *op.cit.*

3. Providing models for medical research that help us understand normal human physiology and disease.
4. Supporting agriculture and the marine food web.
5. Reducing the risk of contracting some human infectious diseases by 'the dilution effect'; by controlling populations of vectors, hosts, and parasites; and by other means.

Box 2.1: Biodiversity-based Medicines

Plants are the basis of traditional medicine systems that have been in existence for thousands of years and continue into modern times. The World Health Organization estimates that up to 80 per cent of the population of developing countries relies on mainly plant-based traditional medicines for their primary health care and that plant products also play an important role in the health care of the rest of the world's population. Common examples of plant-based drugs include quinine – used to treat malaria, morphine – an analgesic, and the cancer drug paclitaxel. Microbes are also highly important for human health – the antibiotic penicillin being the most well known. In addition to plants and microbes there has been growing interest in the role of animals as sources of medicines including products derived from frogs and from marine snails. Natural products also have considerable value as insecticides, contributing to human health both through improved agricultural (and hence food) productivity and in the control of insect-borne diseases.

Source: Chivian, E. (ed.) (2002). *Biodiversity: Its Importance to Human Health*.http://www.med.harvard.edu/chge/Biodiversity.screen.pdf)

3. CONTRIBUTION OF BIODIVERSITY TO THE MDGS ON HEALTH

3.1 MDG 4 – Child Mortality

Biodiversity makes a significant impact on the morbidity and mortality of infants and children. For example:

- Broad spectrum antibiotics derived from tropical soil micro-organisms—such as the tetracyclines and erythromycin—that are widely used for treating infections in infants and children. As bacteria are developing widening resistance to currently used antibiotics, the search for new ones becomes ever more urgent.
- The drug vincristine, extracted from the Rosy Periwinkle (*Vinca rosea*) from Madagascar, has revolutionised the treatment of acute childhood leukemias, increasing the remission rate from 20 to 90 per cent. New chemo-therapeutic agents are in clinical trials from a variety of organisms.

- The devastating illness, hemolytic disease of the newborn, was conquered by an understanding of the mechanisms of rhesus factor incompatibility between an Rh negative mother and her Rh positive fetus – insights that were learned from experimentation with Rhesus monkeys and other primates.

The parasitic disease Schistosomiasis, or bilharzia, provides an interesting example of the example of biodiversity-health linkages. Human schistosomiasis is caused by five species of water-borne flatworms (or flukes) called schistosomes. They infect either the gastrointestinal (including the liver) or the urinary systems and are found in Africa, the Eastern Mediterranean, the Caribbean, South America, South-East Asia, and the Western Pacific Region. The World Health Organisation notes that 'Among human parasitic diseases, schistosomiasis (or bilharzia) ranks second behind malaria in terms of socio-economic and public health importance in tropical and subtropical areas.'[4]

Schistosomiasis is endemic in 74 developing countries, infecting more than 200 million people in rural agricultural and peri-urban areas

The disease is endemic in 74 developing countries, infecting more than 200 million people in rural agricultural and peri-urban areas. Schistosomiasis can affect either the urinary tract, accompanied by progressive damage to the bladder, ureters and kidneys, or the intestines. Death is mostly due to bladder cancer associated with urinary schistosomiasis and to bleeding from varicose veins in the oesopahagus associated with intestinal schistosomiasis. An estimated 500-600 million people world- wide are at risk from the disease, with children particularly prone to infection.

Schistosomiasis occurs in freshwater when intermediate snail hosts release infective forms of the parasite. People are infected by contact with water where infected snails live. As such, the disease is often associated with water resource development projects, such as dams and irrigation schemes, where the snail intermediate hosts of the parasite breed.

The case study below describes how an outbreak of schistosomiasis was thought to be linked to over-harvesting

4. World Health Organisation fact sheets on schistosomiasis-http://www.who.int/health-topics/schisto.htm

of fish stocks in Lake Malawi. Another possible relationship of biodiversity to schistosomiasis may relate to the make up of snail populations themselves. There are suggestions that increased snail species diversity, with some species being incompetent hosts for schistosomiasis, reduces the exposure risk for humans.[5] Given that 80 per cent of those infected with schistosomiasis live in sub-Saharan Africa, effective treatment of this disease will make a big contribution to achieving MDG4 in this region (see Chapter 1).

Box 2.2: Schistosomiasis in Lake Malawi

Before 1992, Lake Malawi was one of the last fresh water lakes in Africa that was considered 'schistosomiasis-free,' but in that year, two cases of schistosomiasis were reported in U.S. Peace Corps volunteers who had been vacationing along the lakes shores. Subsequent investigations found a high prevalence of infection among native populations living along the shores of the lake and in the intermediate snail host *Bulinus globulosus*. Scientists hypothesised that the appearance of schistosomiasis in populations along Lake Malawi was the result of an increase in the numbers of Bulinus snails, due to overharvesting of their main predator, the fish *Trematocranus plachydon*.[6] The overfishing may have been the result of larger human populations turning to fish as a source of food after poor corn crop harvests, and of the increased effectiveness from using malarial bed nets for fishing.[7] This may be the first reported case of an infectious disease outbreak caused by over-fishing.

3.2 MDG 5 – Maternal Mortality

Sleeping sickness is a daily threat to more than 60 million men, women, and children in 36 countries of sub-Saharan Africa, 22 of which are among the least developed countries in the world. When a person becomes infected with Sleeping Sickness, the trypanosome multiples in the blood and lymph glands, and enters the central nervous system where it results in neurological symptoms – confusion, sensory disturbances, poor co-ordination, and sleep disturbances, the last often being irreversible, even after successful treatment. A slowing of physical and mental functioning and retardation are frequent among children who have had the disease. Without treatment, the disease is invariably fatal. The infectious trypanosome can also cross the placenta and infect the fetus, causing abortion and perinatal death.

5. personal communication, Thomas Kristensen (2001).
6. McKaye K, Stauffer Jr. JR, Louda SM. (1986). 'Fish predation as a factor in the distribution of Lake Malawi gastropods'. *Experimental Biology*; 45:279-289
7. personal communication. M. Cetron (2001).

In 1999, only 45,000 cases were reported, but it is estimated by the WHO that as many as 500,000 people are thought to have the disease. It is clear from these figures that a majority of people with African Sleeping Sickness will die without ever having been diagnosed. In certain villages in some provinces in Angola, the Democratic Republic of Congo, and southern Sudan, the prevalence rate is between 20 and 50 per cent. Sleeping sickness has become the first or second greatest cause of mortality, even ahead of HIV/AIDS, in those provinces.[8]

Changes in biodiversity can, however, have a significant impact on the spread of the disease.[9] In Uganda it was found that the tsetse fly *Glossina fuscipes*, the vector of the disease, multiplied rapidly in breeding sites provided by thickets of the plant *Lantana camara*, which had invaded cotton and coffee plantations abandoned during civil unrest in Uganda during the 1980s. This chain of events resulted in an epidemic of acute sleeping sickness in Busoga, Uganda, with cattle acting as intermediate hosts.

In certain villages in some provinces in Angola, the Democratic Republic of Congo, and southern Sudan, the prevalence rate of sleeping sickness is between 20 and 50 per cent

In East and West Africa, the presence of vertebrates that are incompetent reservoirs or hosts for trypanosomiasis may act to reduce the likelihood that humans will become infected. In West Africa, tsetse fly species feed preferentially on pigs, the natural reservoir, while in East Africa, they feed on cattle. Other vertebrates besides pigs and cattle may serve to protect humans from getting trypanosomiasis through what has been called the 'dilution effect'.[10] Dilution would occur if wild vertebrates provided blood meals for tsetse flies, but did not infect them with trypanosomes, thus reducing the prevalence of fly infection and the rates at which the flies bit reservoir hosts and people.

3.3. MDG 6 – HIV/AIDS and Malaria

The loss of biodiversity resulting from the 'bushmeat' trade in chimpanzees, gorillas, and other primates in the West

8. http://www.who.int/emc/diseases/tryp/trypanodis.html; http://www.who.int/inf-fs/en/fact259.html
9. Molyneux D H. (1997). 'Patterns of change in vector-borne diseases'. *Annals of Tropical Medicine and Parasitology,* 91:827-839
10. Ostfeld RS, Keesing F. (2000). 'The function of biodiversity in the ecology of vector-borne zoonotic diseases'. *Canadian Journal of Zoology* 78:2061-2078

Box 2.3: Biodiversity and Cancer

Breast cancer is the second leading cause of cancer deaths in women today (after lung cancer) and is the most common cancer among women, after non-melanoma skin cancers. In the year 2000, there were 59,167 reported cases of breast cancer and 26,616 deaths in Africa; 69,924 cases and 22,735 deaths in South America, and 205,682 cases and 95,632 deaths in Asia. While breast cancer is less common in younger women than in those over 50, it tends to be more aggressive, which may explain why survival rates among younger women are lower.

Cancer of the ovary has a relatively low incidence worldwide, but it is a leading cause of death from gynecologic cancers, as it is often detected only when there is extensive disease and when cures are hard to achieve. While ovarian cancer is primarily a disease of older women in western industrializsed countries, it can be found in younger women in developing countries as well.

In both breast and ovarian cancers, genetic factors are prevalent, but environmental factors, perhaps related in part to exposure to some endocrine disrupting synthetic organic chemicals, are being increasingly implicated in rising cancer rates. Better early detection may also play a role. It may therefore be expected that the incidence of these cancers may rise in the developing world as women in these countries begin to adopt western diets and lifestyles.

A plant-based drug is, however, proving to be an effective agent for treating cancer. As a result of a massive screening programme by the U.S. National Cancer Institute to find new pharmaceuticals, the drug Taxol was discovered in the bark of the Pacific Yew Tree (*Taxus brevifolia*) in old growth forests of the U.S. Pacific Northwest. In early clinical trials, it was found to be effective for inducing remission in cases of advanced ovarian cancers that were unresponsive to other forms of chemotherapy, and it has since been shown to have significant therapeutic benefit for other advanced malignancies as well, including lung cancer, malignant melanomas, lymphomas, and metastatic breast cancers. The mechanism of action is unlike that of other cancer chemotherapeutic agents. The discovery of Taxol has led to an entire new class of even more effective semi-synthetic 'taxoids' for cancer treatment.

Sources: http://www.imaginis.com/breasthealth/statistics.asp
McGuire WP, *et al.* (1989). 'Taxol: A unique antineoplastic agent with significant activity in advanced ovarian epithelial neoplasms'. *Annals of Internal Medicine;* 111:273-279; Nicolaou KC, Guy RK, and P Potier (1996). 'Taxoids: New weapons against cancer'. *Scientific American;* 274(6):94-98

African forests is a stark example of how species may be endangered by human activity and how the loss of our closest relatives may have significant implications for human health.[13] It is believed that a sub-species of chimpanzee (*Pan troglodytes troglodytes*) may be the original source of the HIV-1 epidemic, caused by the transmission of the chimpanzee simian immunodeficiency virus (SIVcpz) to humans on multiple occasions via blood exposures from the hunting and butchering of chimpanzees for bushmeat.[14] Similarly HIV-2 is thought to have its origins from the SIV

13. http://www.med.harvard.edu/chge/biobrief.html (for the complete videotaped congressional briefing with Jane Goodall, Beatrice Hahn, Stuart Pimm, Robert Engelman, and Eric Chivian held by the Center for Health and the Global Environment on Feb. 19, 2002 'Bushmeat and the Origin of HIV/AIDS—A Case Study of Biodiversity, Population Pressures, and Human Health.'
14. Hahn BH, Shaw GM, De Cock KM, and PM Sharp (2000). 'AIDS as a zoonosis: scientific and public health implications'. *Science;* 287:607-614

The extensive killing of primate species along with loss of their habitat not only threatens many of them with extinction, but, in depriving researchers of their most important research model, may also prevent full understanding of the dynamics of HIV/AIDS infections, and success in discovering an effective treatment

carried by the sooty mangabey (*Cercocebus atys*) (SIVsm). Recent research[15] has identified 13 other distinct SIVs in other primate species from Cameron that were killed for bushmeat or were kept as pets. The extensive killing of primate species along with loss of their habitat, therefore, not only threatens many of them with extinction, but, in depriving researchers of their most important research model, may also prevent full understanding of the dynamics of HIV/AIDS infections, and success in discovering an effective treatment. Moreover, exposure to new SIVs from the bushmeat trade in other wild primate populations may result in future HIV-AIDS-like epidemics.

Another aspect of biodiversity that relates to HIV/AIDS involves the search for medicines from natural sources to treat the disease. The story of the potential anti-HIV drug *Calanolide* provides a tragic reminder of what we risk losing with species loss. Chemists from the U.S. National Cancer Institute identified a novel agent (named Calanolide A) from the leaves and twigs of a tree *Calophyllum langierum* found in Sarawak. It was discovered on a return visit to Sarawak that the original tree was gone and that other *C. langiurum* trees could not be found. It was not clear whether the species was extinct. A close relative *C. teymannii* was identified and was found to contain a weaker drug, named Calanolide B, which, while having anti-HIV activity and the same mechanism of action (it is a non-nucleoside reverse transcriptase inhibitor), nevertheless was not as potent as Calanolide A. Calanolide B is currently in clinical trials, the result of a successful venture between MediChem Research and the government of Sarawak.

Similarly, there are many aspects of biodiversity loss and ecosystem alteration that relate to the risk of malaria infection. Rice cultivation in urban areas, for example, can create ideal breeding sites for mosquitoes – the vectors of malaria, as can poorly designed irrigation systems, such as those which occurred in the 1990s in rural India. The links

15. Peeters M, Courgnaud V, Abela B, Auzel P *et al.* (2002). 'Risk to human health from a plethora of simian immunodeficiency viruses in primate bushmeat'. *Emerging Infectious Diseases;* 8(5): 451-457

between deforestation in tropical forests and occurrence of malaria has been extensively studied. Contributory factors include: creation of stagnant pools – particularly as a result of road building; the removal of overhead trees whose falling leaves would have neutralised the alkalinity of standing water; removal of under-story plants and litter that would have served to drain standing water; and increased light and temperatures on the forest floor accelerating photosynthesis by algae. The consequence of all of these changes are an improvement in the habitat quality for larval Anopheles mosquitoes, and a higher potential for reproductive success. Some species of mosquitoes, like *Anopheles darlingi* in Amazonia, benefit more from these changes than others, and tend to out-compete rival species that are less effective vectors for malaria.

Although there does not seem to be documentation for the effects on malarial incidence from a loss of mosquito predators, it would stand to reason that lowered populations of some song birds, bats, dragonflies, amphibians, reptiles, and other species would lead to more outbreaks of disease.

4. ENHANCING THE LINKAGES BETWEEN BIODIVERSITY CONSERVATION AND IMPROVED HUMAN HEALTH

Partnerships are clearly important in the context of health and biodiversity in order to enhance collaboration at the local, national and international levels. In particular, engagement of the private sector is critical

The Millennium Development Goals stress the need for strategic partnerships to deliver on development objectives. Such partnerships are clearly important in the context of health and biodiversity in order to enhance collaboration at the local, national and international levels. In particular, engagement of the private sector is critical if life-saving drugs are to be made accessible and affordable in developing countries. But as well as partnerships, maximising the contribution of biodiversity to health objectives requires attention to a wide range of issues.[16] One option is to consider developing a 'Green List' list of species that are vitally important to human health so that

16. These issues are explored in detail in Chivian (2002) *op.cit.* and summarised here.

effective conservation strategies can be put in place before these species become endangered. These would include, among countless others, pollinators of food crops, apex predators in terrestrial and marine ecosystems, and predators of vectors that carry human diseases. Other priority issues include:

1. The need to improve policy-maker and public understanding of the links between biodiversity and human health so that they are considered comprehensively and together when planning and implementing all development projects.

2. The need to balance the valid concerns of countries and indigenous peoples for the preservation of their natural resources (and of their social and cultural values), with the pressing need for society to be able to use those resources to discover new pharmaceuticals or research models that relieve human suffering.

The valid concerns of countries and indigenous peoples for the preservation of their natural resources (and of their social and cultural values) must be balanced with the pressing need for society to be able to use those resources to discover new pharmaceuticals or research models that relieve human suffering

3. The collection and development of such samples must be scientifically managed and carefully monitored so that the natural functions of the ecosystems from which the samples are taken are maintained and their biodiversity conserved.

4. Trade in all biodiversity products, whether endangered or not, should be monitored to provide early warning that an organism may be in danger of being over-harvested. At the same time, there needs to be more support to enhance the knowledge base about species and their ecosystems so that monitoring and regulation is based on sound scientific data.

5. Water management projects such as the construction of dams and irrigation systems should consider the effects of these practices on populations of disease vectors, particularly mosquitoes and snails, and develop adequate means of disease mitigation.

6. Agricultural development should incorporate means of mitigating disease risk by avoiding the overuse of

antibiotics in livestock and poultry, preventing close spatial associations between domesticated and wild animals to prevent transmission of infectious agents between them, reducing the potential of livestock and poultry as pathogen reservoirs in the local transmission of human vector-borne diseases, and avoiding the destruction and fragmentation of natural habitat that can increase disease risk.

7. Preserving high levels of biodiversity within vertebrate communities should be given the highest priority as a means of reducing the risk of some vector-borne diseases.

8. The scope of the MDG indicators should be expanded to move beyond an exclusive focus on mortality and to include men and women who are not bearing children, including older women.

Separating health goals from other environment and development goals reinforces the widely held misconception that human beings are separate from the environments in which they live. People will not do what is necessary to protect the global environment until they begin to understand the risks that disruptions to physical, chemical, and biological systems present to themselves and to their children. There is no more effective way to help them achieve this understanding than to frame discussions about development and the environment in the concrete, personal terms of human health.

Separating health goals from other environment and development goals reinforces the widely held misconception that human beings are separate from the environments in which they live

3

Climate Change – Biodiversity and Livelihood Impacts

Hannah Reid, IIED[1]

Climate change will put international action to eradicate poverty and achieve the MDGs at risk. Responding to this risk is an opportunity to move away from the science and towards action to reduce poor people's vulnerability to the climate.[2]

1. INTRODUCTION

The debate about climate change has reached a stage where most scientists accept that, whatever happens to future greenhouse gas emissions, we are now locked into a future characterised by significant human-induced changes to our climate. There are two types of response to these changes: the first is to try and reduce the extent to which our climate is altered. This is known as climate change mitigation. The second is to learn to live with the inevitable changes. This is known as adaptation to climate change.

1. The author would like to thank Saliem Fakir and Saleemul Huq for their advice and reviews.
2. Hilary Benn, UK Secretary of State for International Development, March 2004.

Biodiversity is inextricably linked to climate – changes in climate affect biodiversity and changes to natural ecosystems affect climate.[3] This chapter considers the linkages between climate change (mitigation and adaptation) and biodiversity, and then relates these linkages to livelihoods, poverty and achieving the Millennium Development Goals. The chapter finishes with some suggestions for actions needed at global, national and local levels in order to support local solutions.

2. HOW CLIMATE CHANGE AFFECTS BIODIVERSITY

2.1 Direct Impacts

Climate change is likely to have a number of impacts on biodiversity – from ecosystem to species level. The most obvious impact is the effect that flooding, sea level rise and temperature changes will have on ecosystem boundaries, allowing some ecosystems to expand into new areas, while others diminish in size. As well as shifting ecosystem boundaries, these changes will also cause changes in natural habitat – an outcome which will have a knock-on effect on species survival. A growing body of research indicates that, as a result, climate change may lead to a sharp increase in extinction rates. Mid-range predictions from one recent study suggest that 24 per cent of species in the five study regions will be on their way to extinction by 2050 due to climate change. The study indicates that for many species, climate change poses a greater threat to their survival than the destruction of their natural habitat.[4]

Box 3.1: Climate Change and Protected Areas

The impact that floods, sea level rise and changes in climate are likely to have on natural habitats means that some protected areas may no longer be appropriate for the species they were designed to conserve. Those planning the proposed Greater Addo National Park in South Africa recognise this and have factored climate change into their planning. The proposed park covers a large area with a range of elevations, latitudes, microclimates, ecosystems and almost an entire watershed. Species can therefore migrate to another safe habitat if climate change adversely affects their present one (http://www.upe.ac.za/zoo/addo/addoprop.htm).

3. Reid, H., B. Pisupati and H. Baulch (2004). 'How Biodiversity and Climate Change Interact' *SciDev.Net* Biodiversity Dossier Policy Brief. http://www.scidev.net/dossiers/index.cfm?fuseaction=policybriefs&dossier=11
4. Thomas, C. D. *et al.* (2004). 'Extinction risk from climate change'. *Nature* 427: 145-148.

Global warming is also causing shifts in the reproductive cycles and growing seasons of certain species. For example, higher temperatures have led to an increase in the number of eggs laid by the spruce budworm, already one of the most devastating pests in North America's boreal forests.[5]

The impacts of climate change on biodiversity will vary from region to region. The most rapid changes in climate are expected in the far north and south of the planet, and in mountainous regions. These are also the regions where species often have no alternative habitats to which they can migrate in order to survive. Other vulnerable ecosystems and species include small populations or those restricted to small areas. Coral reefs have already shown devastating losses as a result of increased water temperatures (Box 3.2).

Box 3.2: Coral Reefs and Global Climate Change

Coral reefs have the highest biodiversity of any marine ecosystem, and they provide important ecosystem services and direct economic benefits to large and growing human populations in coastal zones. Although the natural habitat of coral reefs can be a stressful environment, recent global increases in reef ecosystem degradation and mortality suggest that the rate and nature of recent environmental changes often exceeds the adaptive capacity of coral reefs. This can lead to the replacement of the coral reef community by non-reef systems. Such ecosystem shifts are well advanced in the Caribbean region, where two major reef-building coral species have been devastated by disease, and in the Indo-Pacific region, where repeated episodes of lethal 'bleaching' have occurred.

This crisis is almost certainly the result of interactions between multiple stresses. These include increased nutrient and sediment loading, direct destruction, contamination, over-harvesting, disease and predation. Rising ocean temperatures have been implicated in chronic stress and disease epidemics, as well mass coral bleaching episodes and reduced calcification. Increasing atmospheric CO2 levels can also inhibit calcification. It is difficult to separate the effects of global climatic and local non-climatic influences when considering reef condition or vulnerability.

Predicting the future of coral reefs is difficult because current environmental changes are causing a combination of surface ocean chemistry and temperature conditions that have not occurred in the evolutionary history of modern coral reef systems. Although climate change has the potential to yield benefits for certain coral species in specific regions, such as the expansion of their geographic ranges, most effects are stressful rather than beneficial. Continued climate change will almost certainly cause further degradation of coral reef communities, which will be even more devastating in combination with the continuing non-climatic stresses.

Source: Robert W. Buddemeier, Joan A. Kleypas and Richard B. Aronson (2004). *Coral Reefs and Global Climate Change. Potential Contributions of Climate Change to Stresses on Coral Reef Ecosystems.* Pew Centre on Global Climate Change.

5. Gitay, H., A. Suárez, D. J. Dokken and R. T. Watson (2002). *Climate Change and Biodiversity*. Intergovernmental Panel on Climate Change Technical Paper V.

2.2 Impacts of Mitigation Activities

It is not just climate change itself that can have an impact on biodiversity. In some cases, the strategies that are adopted to mitigate climate change can affect biodiversity – both positively and negatively. Investment in renewable energy technology may provide climate change benefits, but outcomes for biodiversity are often poor. For example, some bio-energy plantations replace sites with high biodiversity, introduce alien species and use damaging agrochemicals. Large hydropower schemes can cause loss of terrestrial and aquatic biodiversity, inhibit fish migration and lead to mercury contamination.[6] They can also be net emitters of greenhouse gases if submerged soils and vegetation decay and release CO_2 and methane. By contrast, fuelwood conservation measures, such as efficient stoves and biogas use, can conserve carbon reservoirs and reduce pressure on forests.

Projects designed to sequester carbon, and hence mitigate climate change, present opportunities to incorporate biodiversity considerations

The concept of becoming 'carbon neutral' is gaining popularity with many businesses that wish to contribute to climate change mitigation activities by offsetting their carbon emissions. Likewise, many nations have committed to reducing their net greenhouse gas emissions under the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC). Projects designed to sequester carbon, and hence mitigate climate change, present opportunities to incorporate biodiversity considerations. Afforestation and reforestation activities can restore watershed functions, establish biological corridors and provide considerable biodiversity benefits if a variety of different aged native tree species are planted. Monocultures, however, not only reduce biodiversity, but also increase the chances of pest attacks thus challenging the permanence of carbon stocks. The location of afforestation and reforestation projects is also important. Replacing native grasslands, wetlands, shrublands or heathlands may lead to dramatic

6. Montgomery S., M. Lucotte and I. Rheault (2000). 'Temporal and spatial influences of flooding on dissolved mercury in boreal reservoirs'. *The Science of the Total Environment* 260(1-3):147-157. Fearnside, P. M. (2001). 'Environmental impacts of Brazil's Tucurui Dam: unlearned lessons for hydroelectric development in Amazonia'. *Environmental Management* 27(3): 377-396. Fu, C. Z., J. H. Wu, J. K. Chen, Q. H. Qu and G. C. Lei (2003). 'Freshwater fish biodiversity in the Yangtze River basin of China: patterns, threats and conservation'. *Biodiversity and Conservation* 12(8): 1649-1685.

biodiversity losses, and also lower the relative increase in carbon sequestered compared to implementing such projects on degraded land.[7]

3. HOW BIODIVERSITY AFFECTS CLIMATE CHANGE

3.1 Direct Impacts

Just as climate change affects biodiversity, so changes in biodiversity can also affect the global climate. Land use changes that lead to biodiversity losses can cause increased greenhouse gas emissions. Forests are a major store of carbon, and when forests are cut down or burnt, CO_2 is released into the atmosphere. Continuing deforestation, mainly in tropical regions, is currently thought to be responsible for annual emissions of 1.1 to 1.7 billion tonnes of carbon per year, or approximately one-fifth of human CO_2 emissions.[8]

Continuing deforestation, mainly in tropical regions, is currently thought to be responsible for annual emissions of 1.1 to 1.7 billion tonnes of carbon per year, or approximately one-fifth of human CO_2 emissions

Peatlands or mires hold roughly one-third of the carbon contained in soil worldwide, and greenhouse gases are released every time peatlands are burned, drained, converted to agriculture or degraded. Peatland forest fires in Indonesia in 1997 released an amount of CO_2 equivalent to 40 per cent of the world's average yearly carbon emissions from fossil fuels.[9] Such peatlands also provide many environmental services, such as improving water quality. Many are important biodiversity reservoirs or stopover points for migratory species.

There are also feedback mechanisms at work between biodiversity and climate change. For example, some species of ocean algae release dimethyl sulfate (DMS) into the atmosphere. Rising ocean temperatures (a product of global warming) mean that more DMS is released from booming

7. Reid, H. (2003). 'A framework for biodiversity and climate'. *Tiempo, a bulletin on Global Warming and the Third World* 50: 7-10.
8. Brown, S., J. Sathaye, M. Cannell and P. E. Kauppi (1996). 'Management of forests for mitigation of greenhouse gas emissions'. In *Climate Change 1995 – Impacts, Adaptations and Mitigation of Climate Change: Scientific-Technical Analysis*. R. T. Watson, M. C. Zinyowera, R. H. Moss and D. J. Dokken (eds) Contribution of Working Group II to the Second Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, UK, pp. 773-797.
9. Page, S. E., F. Siegert, J. O. Rieley, H. D. Boehm, A. Jaya and S. Limin (2002). 'The amount of carbon released from peat and forest fires in Indonesia during 1997'. *Nature* 420: 61-65.

algal populations. But DMS is also associated with the formation of clouds, which may actually help reduce the amount of heat reaching the Earth's surface.[10]

3.2 Biodiversity as a Tool for Mitigation

Currently, some 60 per cent of anthropogenic global greenhouse gas emissions originate from the generation and use of energy. Use of renewable energy sources provides an opportunity to reduce emissions from burning fossil fuels

Effective biodiversity conservation and management can lead to higher levels of carbon sequestration and hence climate change mitigation. For example, forest management activities such as increasing rotation age, low intensity harvesting, reduced impact logging, leaving woody debris, harvesting which emulates natural disturbance regimes, avoiding fragmentation, provision of buffer zones and natural fire regimes, can simultaneously provide biodiversity and climate benefits. This is also true for certain agroforestry, revegetation, grassland management and agricultural practices such as recycling and use of organic materials. Integrated watershed management can conserve watershed biodiversity in addition to increasing water retention and availability in times of drought, decreasing the chance of flash floods and maintaining vegetation as a carbon sink.

Energy production is another key area where biodiversity conservation provides opportunities to help mitigate climate change. Currently, some 60 per cent of anthropogenic

Box 3.3: Greenhouse Gas Mitigation as a Co-Benefit of the Brazilian Ethanol Programme

The Brazilian ethanol programme was launched in 1975 and remains the world's largest commercial application of biomass for energy production and use. It demonstrates the technical feasibility of large-scale ethanol production from sugarcane and its use as fuel. Each year more than five million cars have been running on ethanol, with remaining cars running on gasohol (an ethanol gasoline mix). Additionally, sugar cane bagasse (a by-product of ethanol and sugar manufacture) is being increasingly used as an industrial fuel, with surplus electricity entering the national grid. The programme has saved foreign exchange due to surplus gasoline exports and reduced oil imports, and created 720,000 jobs directly and 200,000 more indirectly in rural areas. It has curbed city air pollution and has avoided six to 10 million tons of carbon emissions per year since 1980.

Source: Lèbre La Rovere, E. and A. Ribeiro Romeiro (2003). *The Development and Climate Project phase I: Country Study Brasil.* Centro Clima, COPPE, Federal University of Rio de Janeiro, Brazil.

10. Sciare, J., N. Mihalopoulos and F. J. Dentener (2000). 'Inter-annual variability of atmospheric dimethylsulfide in the southern Indian Ocean'. *Journal of Geophysical Research* 105: 26,369-26,377.

global greenhouse gas emissions originate from the generation and use of energy. Use of renewable energy sources provides an opportunity to reduce emissions from burning fossil fuels (Box 3.3).

4. BIODIVERSITY, CLIMATE CHANGE AND LIVELIHOODS

Poverty is a complex, multi-dimensional condition that goes beyond a simple lack of financial resources. Equally important are factors such as lack of education and skills, poor health, inadequate access to water and sanitation services, inadequate or risky asset base, poor quality or insecure housing, weak safety nets to ensure basic consumption can be maintained when income falls or crops fail, inadequate protection of poorer groups' rights, and lack of power and voice.[11] Vulnerability to shocks is thus a key component of poverty.

Climate-induced changes to crop yields, ecosystem boundaries and species' ranges will dramatically affect many poor people's livelihoods. Those most vulnerable to climate change are the poorest groups in the poorest countries of the world

Poor people generally depend more on ecosystem services and products for their livelihoods than wealthy people. The means by which a poor family gains an income and meets its basic needs are often met by multiple livelihood activities. For example, exploiting common property resources such as fish, grazing land or forests can provide income, food, medicine, tools, fuel, fodder, construction materials, and so on. Poor people are therefore severely affected when the environment is degraded or their access to it restricted. This link between poverty and the environment has been recognised for some time.[12]

As a result of this dependency, any impact that climate change has on natural systems threatens the livelihoods, food intake and health of poor people.[13] Climate change will mean that many semi-arid parts of the developing world will become even hotter and drier, with even less predictable rainfall. Climate-induced changes to crop yields,

11. Satterthwaite, D. (ed.) (2003). *The Millennium Development Goals and Local Processes: Hitting the Target or Missing the Point.* IIED, London.
12. Bass, S., H. Reid, D. Satterthwaite and P. Steele (2004). *Reducing Poverty and Sustaining the Environment: The Politics of Local Engagement.* Earthscan, London.
13. Smith, D. and J. Troni (2004). *Climate Change and Poverty: Making Development Resilient to Climate Change.* DFID, London.

ecosystem boundaries and species' ranges will dramatically affect many poor people's livelihoods. Those most vulnerable to climate change are the poorest groups in the poorest countries of the world. This is because they live in areas more prone to flooding, cyclones, droughts, and so on and because they have little capacity to adapt to such shocks. They are often heavily dependent on climate-sensitive sectors such as fisheries and agriculture, and the countries they live in have limited financial, institutional and human capacity to anticipate and respond to the direct and indirect impacts of climate change.[14]

Conservation of biodiversity and maintenance of ecosystem integrity may be a key objective towards improving the adaptive capacity of such groups to cope with climate change. Functionally diverse systems may be better able to adapt to climate change and climate variability than functionally impoverished systems. A larger gene pool will facilitate the emergence of genotypes that are better adapted to changed climatic conditions. As biodiversity is lost, options for change are diminished and human society becomes more vulnerable.

Functionally diverse systems may be better able to adapt to climate change and climate variability than functionally impoverished systems. A larger gene pool will facilitate the emergence of genotypes that are better adapted to changed climatic conditions

Poor people are particularly vulnerable to extreme weather events (Box 3.4). Over 96 per cent of disaster-related deaths in recent years have taken place in developing countries. Extreme weather events are increasing, and during 2001, 170 million people internationally were affected by disasters, 97 per cent of which were climate-related.[15] Women and children are particularly vulnerable. For example, when the 1991 cyclone hit Bangladesh, 90 per cent of victims were women and children. This was due to a number of factors including their capabilities in survival (e.g. swimming), and socio-cultural beliefs that prevented women with their children from congregating in public cyclone shelters.

14. Walter, J. and A. Simms (2002). *The End of Development? Global Warming, Disasters and the Great Reversal of Human Progress*. New Economics Foundation, London. Huq, S., A. Rahman, M. Konate, Y. Sokona and H. Reid (2003). *Mainstreaming Adaptation to Climate Change in Least Developed Countries (LDCs)*. IIED, London. Sperling, F. (2003). *Poverty and Climate Change: Reducing the Vulnerability of the Poor Through Adaptation*. World Bank, Washington DC.
15. Walter, J. (ed.) (2002). *World Disasters Report: Focus on Reducing Risk*. International Federation of Red Cross and Red Crescent Societies, Geneva.

Box 3.4: The Ecological and Social Devastation of Hurricane Mitch

In October 1998, Hurricane Mitch brought winds of over 180 km per hour and 127 cm of rain in only a week to Central America. Over 18,000 people were killed and thousands of homes, bridges, roads, water systems, crops and animals were destroyed. Hurricane Mitch impacted about 6.4 million people, with the poorest groups suffering the greatest losses. Among these groups, the most vulnerable were those living and farming on hillsides and near riverbanks. Unequal land tenure policies and skewed resource distribution mean that many of Central America's farmers own small plots of land on ecologically fragile, disaster-prone lands. With little access to credit, land titles and technical assistance, farmers have few incentives to invest in sustainable farming practices, and ranching, farming, burning and forest removal for timber have all contributed to removing protective vegetative cover. During Hurricane Mitch, heavy rainfall led to massive runoff on these degraded hillsides, which carried away tons of topsoil, rocks and vegetation. Debris-choked rivers also overflowed their banks causing extensive damage to human and natural riverside systems.

Farms using agro-ecological practices such as soil and water conservation, cover cropping, organic fertilisers, integrated pest management and reduced or zero grazing, were more resilient to erosion and runoff. They withstood Hurricane Mitch's impacts better than those farms using conventional farming methods. Damage from gullies and landslides was equally severe on both types of farm, perhaps because many gullies and landslides originated uphill or upstream on poorly managed degraded or deforested slopes. This demonstrates the importance of conserving entire hillsides and watershed ecosystems rather than just individual plots.

Source: World Neighbours (2000). *Reasons for Resiliency: Toward a Sustainable Recovery after Hurricane Mitch*. World Neighbours, Tegucigalpa, Honduras.

5. PRACTICAL WAYS TO PROVIDE BIODIVERSITY, CLIMATE CHANGE AND LIVELIHOOD BENEFITS

Classic top-down approaches to climate change equate to large infrastructure construction projects. Those designed to support adaptation to climate change are often associated with physical protection, for example large sea walls. Those designed to reduce global greenhouse gas emissions and thus mitigate climate change are often associated with large renewable energy schemes, such as hydropower. Such projects often have significant negative impacts on biodiversity and local livelihoods. For example, plans to build scores of dams with massive hydroelectricity generating potential on the Mekong River will affect the livelihoods of the 52 million people currently using river resources, many of whom live below the poverty line. Dam construction will prevent fish migration, and yet Mekong fish provide 40 – 60 per cent of the animal protein consumed by the population of the lower basin. The nine proposed mainstream dam projects alone would also displace 60,000 rural people.[16]

16. Abramovitz, J. N. (1996). *Imperiled Waters, Impoverished Future: The Decline of Freshwater Ecosystems.* World Watch Paper 128. Worldwatch Institute, Washington, D.C.

While big infrastructure projects can be effective, comparatively little attention has been paid to non-structural alternatives and to 'bottom-up' approaches rooted in existing community-based strategies for managing resources and reducing vulnerability to climatic shocks.[17]

Many of the carbon sequestration projects undertaken by companies and nations to mitigate their greenhouse gas emissions do not incorporate biodiversity issues. Even fewer incorporate livelihood and poverty issues as well. The Clean Development Mechanism (CDM), established under the Kyoto Protocol of the Climate Change Convention, aims to provide developed countries that have accepted targets for reducing greenhouse gas emissions with flexibility for achieving these targets, by allowing them to take credits from emissions reduction projects undertaken in developing nations. Projects are supposed to provide global benefits from carbon sequestration, but also sustainable development benefits to host developing countries.[18] Many projects pay little attention to these sustainable development benefits. However, one project generating electricity from biogas and bio-diesel in Brazil is attempting to provide livelihood, carbon and biodiversity benefits (Box 3.5).

While big infrastructure projects can be effective, comparatively little attention has been paid to non-structural alternatives and to 'bottom-up' approaches rooted in existing community-based strategies for managing resources and reducing vulnerability to climatic shocks

Some initiatives succeed in combining biodiversity, livelihood and climate change related benefits. Activities to build the resilience of communities to climate stresses ae continuing in Central America, where following Hurricane Mitch, the charity World Neighbours has been working to increase agro-ecological activities. This is helping vulnerable communities adapt to their changing environments as the incidence and severity of climate change-related disasters increases (Box 3.4). Similarly, since 1992, PASOLAC (Programa para la Agricultura Sostenible en las Laderas de América Central) has been helping communities in Nicaragua, Honduras and El Salvador to increase the agricultural productivity of their

17. Burton, I., J. Soussan and A. Hammill (2003). *Livelihoods and Climate Change: Combining Disaster Risk Reduction, Natural Resource Management and Climate Change Adaptation in a new Approach to the Reduction of Vulnerability and Poverty*. IISD, IUCN and SEI Boston.
18. Huq, S. and H. Reid (forthcoming) 'Benefit sharing under the clean development mechanism'. In D. Freestone and C. Streck *Making Kyoto Work: Legal Aspects of Implementing the Kyoto Protocol Mechanism*. Oxford University Press, Oxford

Box 3.5: Electricity Generation from Biogas and Bio-diesel in Brazil

Garbage is a huge problem in Rio de Janeiro, and a recent emissions inventory shows that the Jardim Gramacho Landfill at Duque de Caxias is the main source of greenhouse gas emissions (in the form of methane) emitted by the city. A new project at the Jardim Gramacho Landfill is converting this polluting open dumpsite into a sanitary landfill, and illustrating the potential for generating electricity from renewable energy sources. This project is one of several under the SouthSouthNorth Project, which seeks to help public and private stakeholders develop the necessary confidence for dealing effectively with the CDM.

Biogas, produced from the decomposition of organic solid wastes in landfills, and bio-diesel, produced from used vegetable (cooking) oils, drive a power generator providing partial energy self-sufficiency for landfill site operation. Remaining fuel needs will come from renewable sources. Technological refinements are still required, but the power generation process will convert methane into CO_2, thus reducing the greenhouse gas effect by a factor of 21. It is projected that the project will reduce emissions by an equivalent of 35,000 tons of CO_2 over a ten-year period. Income from the sale of this carbon will support the project operation.

Electricity generated by the plant is used to clean the water produced at the landfill site, such that only clean water is returned to Guanabara Bay nearby. This has led to the rehabilitation of local mangrove swamps and improvements in associated livelihood opportunities. Employment generation has also occurred through the selective collection of used vegetable oils. However, those who depend on picking through garbage to earn their living have expressed concerns that their livelihood will be threatened. Efforts to provide these people with alternative employment opportunities at recycling plants elsewhere have met with limited success, as people feel they would earn less (they can earn as much as twice the minimum wage picking through waste) and their quality of work would deteriorate (they currently see themselves as freelancers or small entrepreneurs, which would change with employment at a recycling plant). The provision of local social benefits for some low-income groups therefore remains a challenge.

Sources: Orford, M. (2004). *Climate Change and the Kyoto Protocol's Clean Development Mechanism.* ITDG Publishing, London.

hillsides through improved soil and water management. The programme is characterised by participatory demand driven approaches. Such hillsides support tropical forests, key freshwater reservoirs, and several important and diverse ecosystems. They also represent the economic base for the majority of the population in Central America (producing grains, coffee etc.) but are prone to soil and landscape degradation, problems exacerbated by climate change-induced droughts and floods.[19]

'Bottom-up' processes have also met with success in Bangladesh, through the Reducing Vulnerability to Climate Change (RVCC) Project and Vietnam, where the Vietnam National Chapter of the Red Cross has worked with local communities to rehabilitate mangroves (see Case Study 2).

19. IISD (2003). *Livelihoods and Climate Change: Combining Disaster Risk Reduction, Natural Resources Management and Climate Change Adaptation to Reduce Vulnerability and Poverty*. IISD, SEI, Intercooperation. Information Paper 2, December 2003.

6. MEETING THE MILLENNIUM DEVELOPMENT GOALS

Climate change is dealt with in MDG7 on ensuring environmental sustainability. One target set for reaching this goal to 'integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources'. Indicators for monitoring whether this target is met are as follows:

- Proportion of land area covered by forest
- Ratio of area protected to maintain biological diversity to surface area
- Energy use (kg oil equivalent) per $1 GDP (Purchasing Power Parity)
- Carbon dioxide emissions per capita and consumption of ozone-depleting Chlorofluorocarbons (Ozone Depleting Potential tons)
- Proportion of population using solid fuels

The focus on energy use and CO_2 emissions emphasises mitigating climate change and ignores the fact climate change is already a reality, and adaptation needs to be considered. This need for adaptation does not replace the need to mitigate climate change; both adaptation and mitigation are important parts of the solution.[20] The proportion of population using solid fuels is also a poor measure of air quality as it fails to distinguish between the dangers of indoor and external air pollution.

The indicators relating to energy use and CO_2 emissions would be improved if they captured some measure of broader environmental and social benefits emerging from activities undertaken

The forest indicator would be better if it captured some measure of goods and services coming from forests, such as carbon sequestration, soil protection, biodiversity enhancement and contributions to local livelihoods.[21] Likewise, the indicators relating to energy use and CO_2 emissions would be improved if they captured some measure of broader environmental and social benefits

20. Sperling (2003), *op.cit*
21. Roe, D. (2003). 'The Millennium Development Goals and natural resources management: reconciling sustainable livelihoods and resource conservation or fuelling a divide?' In D. Satterthwaite (ed.) *The Millennium Development Goals and Local Processes: Hitting the Target or Missing the Point*. pp. 55-72. IIED, London.

emerging from activities undertaken. If such considerations are taken into account, investment could shift towards projects with multiple livelihood, biodiversity and climate change benefits (or at least projects which do no harm in these additional contexts), as opposed to initiatives (such as large dams), which might meet one indicator, but which have significant negative impacts on ecosystem integrity, biodiversity, climate change mitigation or adaptation, and local livelihoods. Achieving the MDGs is already proving to be a challenge. Ensuring that any progress made towards meeting these targets will benefit the poor depends on the process undertaken.

7. THE WAY AHEAD: LINKING CLIMATE CHANGE, BIODIVERSITY CONSERVATION AND POVERTY REDUCTION

The role of local processes in addressing climate change, biodiversity conservation and poverty reduction is often overlooked – or undermined. The biodiversity conservation agenda has, for example, been driven by international priorities – such as preservation of rare and charismatic mammals. This approach has often superseded local values attached to biodiversity such as livelihood support or risk reduction in the face of climate shocks.[22] Likewise, much attention and funding, currently focuses on top-down strategic planning requirements (often stemming from the environmental conventions spawned at the UN Earth Summit in Rio in 1992) such as National Communications, National Adaptation Plans of Action, National Biodiversity Strategies and Action Plans, National Conservation Strategies, National Environmental Action Plans and Poverty Reduction Strategy Papers. Such initiatives typically challenge poor countries by placing considerable strain on already overloaded institutions with limited capacity.[23]

The role of local processes in addressing climate change, biodiversity conservation and poverty reduction is often overlooked – or undermined

22. The relationship between local and global values is explored in detail in Chapter 5
23. Dalal-Clayton, B. (2003). 'The MDGs and sustainable development: the need for a strategic approach'. pp73-91 in D. Satterthwaite (ed.) *op.cit.*

Disaster management plans drawn up to deal with climate-induced disasters could incorporate impacts on local ecosystems in addition to vulnerable human settlements. This would recognise the role that ecosystems play in local livelihoods as well as havens of biodiversity

Supporting local solutions requires action at several levels. Globally, actions to reduce poverty and inequity will ultimately reduce vulnerability to climate change and may also reduce unsustainable natural resource use. Such actions include curbing the loss of income from trade barriers and subsidies paid to farmers in high income nations; improved market access for processed raw materials; external investment and untied aid (to support accountable local processes); debt relief; and a commitment in high-income nations to change consumption patterns and thus reduce greenhouse gas emissions.

Synergies between the Climate Change Convention and Convention on Biological Diversity need to be explored, alongside links with national development plans such as Poverty Reduction Strategy Papers.[24] This is not easy as the processes have separate constituencies, administration arrangements, negotiators and guiding scientific bodies.[25] Some feel encouraging countries to establish a single body to deal with their obligations under all international environmental agreements would be useful. For example, disaster management plans drawn up to deal with climate-induced disasters could incorporate impacts on local ecosystems in addition to vulnerable human settlements. This would recognise the role that ecosystems play in local livelihoods as well as havens of biodiversity.

Possible tools for integrating biodiversity, livelihood and climate change concerns include the ecosystem approach, which could incorporate climate concerns and environmental assessments which can be adapted to support broad uptake of environmental, social and development priorities. Measuring the value of environmental services to capture the true value of environmental goods and services is needed. Participatory

24. CBD Ad Hoc Technical Expert Group on Biodiversity and Climate Change (2003). *Interlinkages Between Biological Diversity and Climate Change and Advice on the Integration of Biodiversity Considerations into the Implementation of the United Nations Framework Convention on Climate Change (UNFCCC) and Its Kyoto Protocol.* Draft Report for Experts and Government Review.
25. Reid *et al.* (2004). *op.cit*

processes and an holistic approach incorporating all aspects of sustainable development should be promoted.[26]

Nationally, policies that benefit biodiversity, climate change adaptation and mitigation, and poverty reduction need promotion. In particular, development activities should integrate responses to climate risks and thereby minimise the impacts of climate change.[27] Development agencies, national governments and other stakeholders should internalise climate change into their work. However, many adaptation activities are located within the Ministries of Environment, which are traditionally relatively weak and have little influence over line Ministries (such as those responsible for agriculture or water management).

Good governance is very important, but inevitably requires contextualisation within the complexities of local and national political systems.[28] Stronger decentralised government can play an important role, but a well functioning national government with vision and accountability is also critical. Locally, actions that encourage fair and accountable local government, effective land tenure reform and common property resource management in ways that protect rights of poor groups are important.

Capacity building activities should support local solutions and bottom-up processes accountable to low-income groups

One key priority in the search for solutions is to build on the considerable body of knowledge already possessed by poor people. Adaptation activities in particular should take account of this knowledge because poor people have had to cope with climate variability for many years. Capacity building activities should support local solutions and bottom-up processes accountable to low-income groups. Rather than categorising poor people as beneficiaries of aid, support should be provided for them to prioritise their own efforts to reduce climate-related vulnerability through ecosystem management and restoration activities that sustain and diversify local livelihoods.

26. Reid (2003). ***op.cit***
27. Smith and Troni (2004). ***op.cit***
28. Bass ***et al.*** (2004). ***op.cit***

Case Study 2

Local Processes Linking Climate Change and Biodiversity

REDUCING VULNERABILITY TO CLIMATE CHANGE PROJECT, BANGLADESH

Bangladesh has always been vulnerable to climatic variability, but global warming will exacerbate its environmental problems. Most of the land is barely above sea level, and rising sea levels could cause Bangladesh to lose 15% to 17% of its landmass within the next 50 years. Drought in the dry season could become more severe, and rain in the wet season more intense. Floods and cyclones are likely to be more frequent and more severe. Higher temperatures along with increased salinity and more waterlogged areas will affect agriculture and fisheries, as well as the availability of drinking water. Coastal biodiversity is threatened, particularly in the ecologically important Sundarbans. Farming systems have already been seriously disrupted, and the poverty of local people means that coping mechanisms for adapting to new situations are limited.

The Reducing Vulnerability to Climate Change (RVCC) Project aims to increase the capacity of Bangladeshi communities in the southwest to adapt to the adverse impacts of climate change via the promotion of sustainable development and local level capacity building. The project operates at the household level, working with 4,300 vulnerable households to explore new livelihoods opportunities. Local partner organisations work with local government and community leaders to raise awareness of climate change impacts and help develop community adaptation strategies. The project is supporting capacity building of six local organisations in collection and dissemination of climate change information, advocacy on salinity

and potable water, climate change awareness campaigns and development of a secondary school climate change module. Project partners regularly interact with national climate change stakeholders on policy and advocacy issues to increase awareness of local climate change implications and local people's needs.

Source: RVCC Project leaflet, CARE Bangladesh.

MANGROVE REHABILITATION IN VIETNAM

In Vietnam, tropical cyclones have caused considerable damage to the livelihoods of those living near the coast. In future decades climate change may increase the frequency and severity of tropical storms. However, the relative uncertainty surrounding anticipated climate change impacts makes it difficult for decision-makers to justify increased costs for coastal protection. Under such circumstances, it is important to adopt precautionary adaptation approaches that minimise future risk and reduce existing vulnerability.

Mangrove ecosystem rehabilitation along much of Vietnam's coastline represents such an approach. Mangrove wetlands provide enhanced physical protection from storms and are a reservoir for carbon sequestration. They also provide a resource base for local livelihoods and income generation. Since 1994, the Vietnam National Chapter of the Red Cross has worked with local communities to plant and protect mangrove forests in northern Vietnam. Nearly 12,000 hectares of mangroves have been planted, and the benefits have been staggering. Although planting and protecting the mangroves cost approximately US$1.1 million, it saved US$7.3 million per year in dyke maintenance. During the devastating typhoon Wukong in 2000, project areas remained relatively unharmed while neighbouring provinces suffered huge losses in lives, property and livelihoods. The Vietnam Red Cross estimates that some 7,750 families have benefited from mangrove rehabilitation. Family members can now earn additional income from selling crabs, shrimp and molluscs while increasing the protein in their diets.

Source: International Federation of Red Cross and Red Crescent Societies (2001) Coastal Environmental Protection: A Case Study of the Vietnam Red Cross. IFRC, Geneva.

4

How Can Markets for Ecosystem Services Benefit the Poor?

Maryanne Grieg-Gran, IIED and Joshua Bishop, IUCN

The world has begun to recognise that it needs the Amazon and other tropical forests. The time has come to start paying for them.[1]

1. INTRODUCTION

There is growing interest in market-based approaches to conserving ecosystem services.[2] In both developed and developing countries a range of measures have been introduced. The basic concept is to create positive economic incentives for

1. The Economist, July 24th 2004.
2. See for example: Daily, G.C. and Ellison, K. (2002). *The New Economy of Nature and the Marketplace: The Quest to Make Conservation Profitable*. Island Press: Washington, D.C. Gutman, P. (ed.) (2003). *From Goodwill to Payments for Environmental Services: A Survey of Financing Options for Sustainable Natural Resource Management in Developing Countries*. Danida and WWF: Washington, D.C. Johnson, N., White, A. and Perrot-Maître, D. (2001). *Developing Markets for Water Services from Forests: Issues and Lessons for Innovators*. Forest Trends with World Resources Institute and the Katoomba Group: Washington, D.C. Mantua, U., Merlo, M., Sekot, W. and Welcker, B. (2001). *Recreational and Environmental Markets for Forest Enterprises: A New Approach Towards Marketability of Public Goods*. CABI Publishing: Wallingford. Swingland, I. (Ed.) (2002). *Capturing Carbon and Conserving Biodiversity: The Market Approach*. Earthscan: London. Different authors use various terms to describe efforts to create positive incentives to encourage the supply of ecosystem services, including: market-based instruments (MBIs), payments for ecosystem services, markets for environmental services, rewards for ecological services, and so on.

land managers to behave in ways that increase, or at least maintain, certain environmental functions. These include, among others:

- The sequestration of carbon in biomass or soils;
- The provision of habitat for endangered species;
- The protection and maintenance of landscapes that people find attractive (such as cloud forest in Costa Rica, the veld in Southern Africa or the patchwork of hedgerows, cropland and woodland typical of southern England); and
- A catch-all category of 'watershed protection' which involves various hydrological functions related to the quality, quantity or timing of fresh water flows from upstream areas to downstream users.

While the primary goal of these market initiatives has been environmental, there is growing interest in their potential to meet development objectives as well

Some schemes are recent and experimental, such as the BushTender pilot scheme covering 3000 hectares in the State of Victoria, Australia, under which private land owners are paid to provide habitat conservation services to state agencies.[3] Other schemes are relatively well-established, such as the Payment for Environmental Services (PES) scheme in Costa Rica, which has been in operation for over eight years.[4]

While the primary goal of these market initiatives has been environmental, there is growing interest in their potential to meet development objectives as well.[5] The commitment to the United Nations Millennium Development Goals (MDGs) raises the question as to whether these new markets for

3. Stoneham, G., Chaudhri, V., Ha, A. and Strappazzon, L. (2003). 'Auctions for conservation contracts: an empirical examination of Victoria's BushTender trial,' *Australian Journal of Agricultural and Resource Economics,* 47(4): 477-500.
4. Rojas, M., and Aylward, B. (2003). *What are we learning from experiences with markets for environmental services in Costa Rica? A review and critique of the literature.* Markets for Environmental Services No. 2. IIED, London. Snider, A.G., Pattanayak, S.K., Sills, E.O. and Schuler, J.L. (2003). 'Policy Innovations for Private Forest Management and Conservation in Costa Rica,' *Journal of Forestry* (July/August): 18-23.
5. Landell-Mills, N., and Porras, I. (2002). *Silver Bullet or Fool's Gold? A Global Review of Markets for Forest Environmental Services and Their Impacts on the Poor.* IIED, London. Pagiola, S., Bishop J., and Landell-Mills, N. (eds.) (2002). *Selling Forest Environmental Services Market-based Mechanisms for Conservation and Development.* London: Earthscan Publications Ltd. Scherr, S.J., White, A. and Kaimowitz, D. (2001). *Making Markets Work for Forest Communities.* Forest Trends: Washington, D.C. Shilling, J.D. and Osha, J. (2004). *Paying for Environmental Stewardship: Using Markets and Common-Pool Property to Reduce Rural Poverty while Enhancing Conservation.* Technical Paper, Economic Change, Poverty and The Environment. Macroeconomics for Sustainable Development Program Office, WWF: Washington, D.C.

ecosystem services can also help reduce poverty. In this respect, the most obvious benefit of market initiatives is the potential to bring new sources of cash income to previously marginalised communities. But just as the formulation of the MDGs reflects a view that poverty is multi-dimensional, so it is important to look beyond cash income and consider how market initiatives affect other dimensions of poverty. For example, the improvement of natural resource management resulting from the use of such mechanisms may bring benefits in the form of improved nutrition for those who depend on wild foods. Similarly, the urban poor may benefit from improved access to safe drinking water and reduced risk of floods, as a result of payments for watershed protection upstream.

At the same time, there are also concerns that markets for ecosystem services may be harmful to the poor, for example by restricting their access to natural resources on which they depend for their livelihoods or by exposing them to the risks of market change. Much depends on how the initiatives are designed and the context in which they are introduced.

This paper explores the various ways in which markets for ecosystem services could contribute to the MDGs, as well as the possible pitfalls. Drawing on some recent case studies it considers the experience of specific initiatives.

There are concerns that markets for ecosystem services may be harmful to the poor, for example by restricting their access to natural resources on which they depend for their livelihoods or by exposing them to the risks of market change. Much depends on how the initiatives are designed and the context in which they are introduced

2. MARKET-BASED MECHANISMS FOR ECOSYSTEM SERVICES

The forms of, and participants in, systems of economic incentives for ecosystem services are extremely varied. One of the most prominent is *direct payments for environmental services*.[6] These are made usually by governments but sometimes also by NGOs, to farmers and other private land-owners, in an attempt to encourage certain 'conservation-oriented' land use practices. In Costa Rica, for example, the government has since 1996 paid landowners enrolled in a scheme designed to reward the provision of environmental

6. Ferraro, P.J. and Kiss, A. (2002). 'Direct Payments to Conserve Biodiversity,' *Science* 298, 29 November: 1718-1719.

services associated with forest protection, forest management and reforestation (Box 4.1). This scheme has provided a model for other countries to follow.

Box 4.1: Payments for forest environmental services in Costa Rica

The Fondo Nacional de Financiamiento Forestal (FONAFIFO) pays forest owners and protected areas in Costa Rica for reforestation, forest management and forest conservation under 10-15 year contracts. FONAFIFO acts as an intermediary between forest owners and buyers of various ecosystem services, including carbon sequestration, watershed protection, scenic beauty and biodiversity conservation. As of the end of 2001, almost 4500 contracts had been written covering over 250,000 hectares, at a cost of US$50 million, with pending applications for another 800,000 hectares. Funds for the scheme are derived from a national fuel tax, supplemented by contributions from private companies.

Sources: Pagiola et al (2003). *op.cit.*
Snider et al (2003). *op.cit.*
Miranda, M., Porras, I., T., and Moreno, M. (2003). 'The social impacts of payments for environmental services in Costa Rica. A quantitative field survey and analysis of the Virilla Watershed.' *Markets for Environmental Services*, No. 1. IIED, London.

A variation on this theme is the *purchase or leasing* of land, or of resources on the land, from either public or private owners, for the purpose of conservation or sustainable use. For example, NGO buyers are actively engaged in rural land markets to acquire threatened habitat, purchasing development rights from private land owners, or competing with timber companies to secure long-term concessions on publicly-owned forest land.[7] In Bolivia, a consortium of international NGOs including the Nature Conservancy, private energy companies and the government bought out timber concession holders in order to extend the Noel Kempff Mercado park.[8]

There is also a proliferation of voluntary *eco-labelling and certification* schemes, which again seek to encourage environmentally-friendly resource management practices, from organic cotton farming to sustainable timber production to turtle-friendly fishing. In such cases there is often a hope that consumers will be willing to pay a little more for certifiably 'sustainable' products and services, and that enough of this premium will be left over after deducting

7. Hardner, J. and Rice, R. (2002). 'Rethinking green consumerism,' *Scientific American*, 287: 89-95
8. May, P.H., Boyd, E., Veiga, F., and Chang, M. (2004). 'Local sustainable development effects of carbon projects in Brazil and Bolivia. A view from the field.' *Markets for Environmental Series No. 5*. IIED, London.

the costs of certification itself to allow certified suppliers to cover their production costs, which are often higher than the costs of conventional, 'unsustainable' practices.[9] An example is the *Café Practices* scheme developed by Starbucks Coffee and Conservation International, which seeks to reward social and environmental best practice throughout the supply chain. Under this scheme, points are awarded to coffee bean producers according to 27 criteria of sustainable production; based on their scores, suppliers receive premium prices for their coffee.[10]

A third category of incentives for ecosystem services involves the creation, by government, of *new rights and responsibilities* affecting the use of natural resources. One recent example is the commitment by many governments to reduce or mitigate emissions of greenhouse gases. This has led to new national legislation assigning emission reduction targets to industry, as well as the purchase by polluters of carbon credits from forestry operators and others.[11] The Clean Development Mechanism (CDM) of the Kyoto Protocol allows companies in developed countries to offset their carbon emissions through investments in projects in developing countries, which both reduce net greenhouse gas emissions and contribute to sustainable development objectives of the host country (Box 4.2).

Box 4.2: Trade in carbon sequestration services

The prospect of the Kyoto Protocol coming into force has led to the emergence of diverse carbon sequestration projects in developing countries. Some large companies have bought land to establish plantations. For example, the vehicle manufacturer Peugeot bought land in Mato Grosso, Brazil, to establish native species plantations. Companies have also set up new organisations to promote the establishment of forest plantations. FACE, for example, is an organisation backed by Dutch utilities that has initiated the PROFAFOR programme in Ecuador, under which private landowners and communities receive funding for establishing plantations in exchange for ceding the carbon rights to FACE.

Sources: May *et al.* (2004). *op.cit.*
Albán M., and Argüello, M. (2004). 'Un análisis de los impactos socials y económicos de los proyectos de fijación de carbono en el Ecuador. El caso de PROFAFOR-FACE'. Markets for Environmental Services No. 7 IIED, London.

9. Eba'a Atyi, R. and Simula, M. (2002). *Forest Certification: Pending Challenges for Tropical Timber*. Background Paper. ITTO: Yokohama.
10. Millard, E. (2004). Creating Market Incentives for Farmers to Adopt Best Practices. Presentation to the Ecoagriculture Conference, Nairobi, 27 September – 1 October 2004. Conservation International: Washington, D.C.
11. Lecocq, F. (2004). 'State and Trends of the Carbon Market 2004'. World Bank: Washington, D.C.

Chapter 3 explores further the links between conservation activities and climate change.

Other examples of this approach include wetland and conservation banking in the United States (Box 4.3), trade in forest conservation obligations in Brazil,[12] and an emerging market in groundwater salinity credits in Australia.[13] What these initiatives have in common is the possibility of trade, namely the buying and selling of

Box 4.3: Habitat banking in the United States

In the U.S. public agencies and private firms are required to avoid, minimise or mitigate adverse impacts on certain types of habitat. This requirement is imposed as a pre-condition for the issuance of permits authorising land development. The obligation to protect habitat is mandated at a Federal level by the 1972 Clean Water Act, which includes provisions to protect wetlands and aquatic resources, and the 1973 Endangered Species Act, as well as by relevant state and local laws. This legal framework has stimulated the emergence of environmental entrepreneurs ('mitigation bankers'), who sell habitat offsets to land developers. Purchases of wetland offsets alone cover more than 50,000 hectares.

Sources: Clark, D. and Downes, D. (1995). 'What Price Biodiversity? Economics and Biodiversity Conservation in the United States,' reprinted in *Journal of Environmental Law and Litigation*, 9(11), 1997. National Research Council. (2001). *Compensating for Wetland Losses under the Clean Water Act.* Committee on Mitigating Wetland Losses, Board on Environmental Studies and Toxicology, Water Science and Technology Board, Division on Earth and Life Studies, National Research Council. National Academy Press: Washington, D.C. Wilkinson, J. and Kennedy, C. (2002). *Banks and Fees: The Status of Off-site Wetland Mitigation in the United States.* Environmental Law Institute: Washington, D.C.

environmental obligations to meet government mandates. Without a trading mechanism, of course (or another financial incentive such as a tax credit), there is only the legal obligation to comply with the mandate. This may be sufficient to achieve public environmental goals, assuming that enforcement is effective, but it does not provide any positive incentive to provide environmental benefits and is likely to result in higher costs of compliance.

3. IMPACTS OF MARKETS FOR ECOSYSTEM SERVICES ON THE POOR

Markets for ecosystem services are not primarily intended to reduce poverty but rather to generate new funding for, and

12. Chomitz, K.M., Thomas, T.S. and Brandão, A.S. (2003). *Creating Markets for Habitat Conservation when Habitats are Heterogenous,* Paper presentation to the 4th BioEcon conference on Economic Analysis of Policies for Biodiversity Conservation, 28-29 August 2003, Venice.
13. van Bueren, M. (2001). *Emerging Markets for Environmental Services: Implications and Opportunities for Resource Management in Australia.* Publication No. 01/162, Rural Industries Research and Development Corporation: Barton and Kingston.

reduce the costs of achieving, conservation goals. Not surprisingly, the proponents of such schemes rarely target the poorest of the poor when they seek to identify potential sellers or buyers of ecosystem services. There is also a practical constraint that in order to benefit directly from the sale of ecosystem services, suppliers are normally required to own land or at least have recognised rights over natural resources. Landless agricultural labourers, for example, who are often among the poorest people in any rural economy, are not likely to be able to supply ecosystem services. They may, however, be affected by markets for ecosystem services in the following ways:

- As buyers/users of ecosystem services;
- As employees of operations producing ecosystem services;
- As users of natural resources affected by a market initiative; or
- Through more indirect effects e.g. the impacts of changing land use on food prices, rural wages or the multiplier effects of local purchases.

Attention has focused on those directly involved in selling ecosystem services, partly because such people are more visible. Less is known about impacts on people *not* participating in market-based initiatives

Attention has focused on those directly involved in selling ecosystem services, partly because such people are more visible. Less is known about impacts on people *not* participating in market-based initiatives (and why), or about impacts on the poor as users of ecosystem services. While these other channels may be important, due to lack of evidence we devote more emphasis in this chapter to the impacts on the poor as potential suppliers of environmental services.

3.1 The Potential for Participation of Poor People in Ecosystem Service Markets

The most visible impact of market initiatives is their effect on cash incomes. In Pimampiro in Ecuador, for example, the local government pays a small group of farmers, whose land is in the headwaters of the town water supply system, to protect their forests. While the payments may not seem

substantial, at just US$1 per hectare per year, they constitute on average 30 per cent of household income, enabling the farmers to pay school fees and health care amongst other necessities.[14]

Payments for ecosystem services can also contribute to poverty reduction by reducing risk through diversification of livelihood options. For example, payments for carbon sequestration can cover a part of the establishment costs of a tree plantation, while income from timber sales provides a new source of income. Thus in Huetar Norte, Costa Rica, payments for ecosystem services have led to a diversification of activities at the farm level. The effect of this, together with the previous forest subsidy scheme has been to transform an area which was, until the middle of the last century, a cattle ranching region to one where forestry represents a significant proportion of land use.[15] Similarly communities participating in the PROFAFOR scheme in Ecuador see forestry as a useful means of diversification and a hedge against wide fluctuations in livestock prices.[16]

While the formalisation of land tenure may simply coincide with a market for ecosystem services, rather than resulting from it, and while market schemes are likely to target areas where land rights are already clear, the fact remains that a payment system is facilitated by secure property rights

Land tenure

Other aspects of market initiatives may be equally, or even more, important for poverty reduction than the payments themselves. Much depends on the measures that accompany a payment system. One of the most important by-products of payment for ecosystem services is the formalisation of land tenure. Selling carbon or watershed protection services without clear title to land is more difficult, as buyers lack security that the sellers will be able to provide the desired services for the duration of the contract. While the formalisation of land tenure may simply coincide with a market for ecosystem services, rather than resulting from it, and while market schemes are likely to target areas where land rights are already clear, the fact remains that a payment system is facilitated by secure property rights. In

14. Echavarría M., Vogel, J., Albán M., and Meneses, F. (2004). 'The impacts of payments for watershed services in Ecuador. Emerging lessons from Pimampiro and Cuenca'. *Markets for Environmental Services* No. 4, IIED, London.
15. Miranda, M., Porras, I., T., and Moreno, M. (forthcoming). *The Social Effects of Carbon Markets in Costa Rica. A Case Study of the Huetar Norte Region*. IIED, London.
16. Albán M., and Argüello, M. (2004). *op.cit.*

some circumstances the introduction of a payment scheme has given an impetus to the formalisation of land tenure. In Ecuador, for example, plantations established under the PROFAFOR initiative for the sale of carbon services are believed by the communities concerned to have made their land tenure more secure, a consequence of contracts drawn up between the communities and the implementing agency.[17]

Capacity building and social capital

Capacity building is also important, both as a product of market initiatives but also as a contributing factor to their success. In Pimampiro, farmers received assistance for soil conservation, organic farming and forest management, helping them to increase agricultural productivity.[18] In Huetar Norte, participants in the carbon service payment scheme derive some satisfaction from their newly acquired expertise in forestry, although they have acquired this largely through learning-by-doing with only limited external assistance.[19]

Capacity building is important, both as a product of market initiatives but also as a contributing factor to their success

Strengthening local social organisations is often a specific component of payment schemes, either because buyers seek to reduce transaction costs by dealing with a small group of supplier representatives rather than numerous individuals, or because the promoters of payment schemes have understood the importance of this aspect for facilitating access to the schemes and for community development more generally. Improvements in social organisation can bring benefits for other aspects of local livelihoods, for example in the marketing of conventional cash crops. In Huetar Norte, participants believe that the payment scheme has encouraged the creation and strengthening of community associations. The agricultural association of Sarapiqui (CACSA), which groups together 150 small producers, became involved in the scheme and has developed additional agriculture and livestock projects to diversify activities and improve productivity. In San

17. Albán and Argüello (2004). *op.cit.*
18. Echavarría *et al.* (2004). *op.cit.*
19. Miranda *et al* (forthcoming). *op.cit.*

Carlos, another canton in the region, a wood development association was set up, initially to secure training and extension activities for forest producers/participants in the payment scheme. It is now promoting the creation of a co-operative to enable producers to secure better terms for their timber sales.[20] In Ecuador, a community involved in the PROFAFOR-FACE carbon sequestration scheme has developed a separate community credit mechanism.[21]

Environmental benefits

Improvement of environmental quality as a result of the introduction of ecosystem service payments could bring benefits for the poor, in terms of improved access to resources, increased productivity or reduced risk. However, as most schemes are relatively recent, there is little firm evidence of environmental improvements, let alone evidence of impacts on particular groups. Nevertheless, initial perceptions of participants in some initiatives suggest positive effects. In Huetar Norte, participants in the scheme believe that the recovery of forest landscapes in the area has improved soils and promoted tourism.[22] In the case of the PROFAFOR scheme in Ecuador, communities note increased wildlife and the beneficial effects of plantations as windbreaks. On the other hand, in one of the five communities surveyed there was a belief that water quality had been affected adversely.[23]

Improvement of environmental quality as a result of the introduction of ecosystem service payments could bring benefits for the poor, in terms of improved access to resources, increased productivity or reduced risk

Impacts on non-participants

Benefits for those not directly involved as sellers of environmental services are not well-documented, partly because these groups are less visible, more numerous and more dispersed. The main benefit noted in existing case studies is employment. In the Virilla watershed in Costa Rica, for example, the PES scheme has provided occasional employment for labourers to carry out forest protection activities. However, it is not clear whether there would have been more employment if the land had been used for cattle

21. Miranda *et al.* (forthcoming). *op.cit.*
22. Albán and Argüello (2004). *op.cit.*
23. Miranda *et al.* (forthcoming). *op.cit.*
24. Albán and Argüello (2004). *op.cit.*

ranching. Clearer indications of the employment benefits of market initiatives are provided by some carbon projects in Brazil. The Peugeot project in Mato Grosso state, for instance, is planting native tree species in a 2000 hectare area formerly used for cattle ranching; this change in land use requires more workers from the local community than cattle ranching.[25] Local labour requirements are expected to diminish over time, as the trees are established, but are still expected to be higher than for cattle ranching.[26] In some cases the impacts on labour demand may be indirect. In Huetar Norte, the stimulus to the wood processing industry from the PES scheme has contributed to employment generation in a range of wood-related activities, such as sawmills and furniture manufacture.[27] While such evidence is encouraging, other case studies suggest negative impacts on rural employment (see below).

3.2 Drawbacks and Constraints to Participation by the Poor

There are several reasons why the poor may find it difficult to participate directly as providers of ecosystem services. Where payments are made to rural land-owners, for example, the poor may be excluded because they lack clear legal title to land. In Costa Rica, participants in the PES scheme are required to have officially recognised land title documents. Where markets require certification of production processes, the poor may find their operations are too small to support the fixed costs of getting certified. In other cases, poor producers may simply lack access to the capital, information and expertise needed to engage in markets for ecosystem services (or indeed in most other markets). In short, markets for ecosystem services may have some of the same 'anti-poor' characteristics as markets for timber, which are capital-, technology- and skill-intensive, involve large economies of scale, aim at specialised consumer markets, and require long-term investment.[28]

Where markets require certification of production processes, the poor may find their operations are too small to support the fixed costs of getting certified

25. Miranda *et al.* (forthcoming). *op.cit.*
26. May *et al.* (2004). *op.cit.*
27. Miranda *et al.* (forthcoming). *op.cit.*
28. Sunderlin, W.D., Angelsen, A. and Wunder, S. (2003). 'Forests and Poverty Alleviation' in FAO, *State of the World's Forests* pp 61-73. Food and Agriculture Organisation, Rome.

Barriers to participation

Most existing case studies have focused on participants in PES schemes. As a result, it is not easy to identify constraints to participation. A recent study of the Virilla Watershed in Costa Rica, however, surveyed some non-participants, finding that their main concerns related to the rules of the system, in particular restrictions on using forests as temporary shelter for cattle and uncertainty over future legal changes.[29] In Huetar Norte, other rules affecting the access of poorer landowners were highlighted, including: the ineligibility of beneficiaries of land reform programmes to participate in the PES scheme, even though their land might be most suitable for forestry; the risk of being excluded from other public benefits, such as housing credit, once they join the PES scheme; and the ineligibility (until recently) of forestry activities for lending under the National Bank System for Financing. The latter restrictions have since been lifted as forestry is increasingly recognised as a potentially responsible and productive activity.

In Costa Rica, there are limits on the maximum size of private landholdings that qualify for PES but virtually no minimum size, with plots as small as one hectare for reforestation and two hectares for forest protection eligible under the scheme

Targeting small-scale producers

Some market-based schemes have made special attempts to target smallholder farmers even when it would be more cost-effective to deal with large private landowners. In 2002, the PROFAFOR scheme in Ecuador reported that nearly 30 per cent of its contracts in the highland region were with communities of smallholders, accounting for 40 per cent of the total area covered by the scheme.[30] In Costa Rica, there are limits on the maximum size of private landholdings that qualify for PES but virtually no minimum size, with plots as small as one hectare for reforestation and two hectares for forest protection eligible under the scheme.[31] In spite of such attempts to favour smallholders, evidence from the Virilla watershed shows that landowners receiving payments were relatively wealthy, with an average income of US$22,000 per year. Moreover, over 80 per cent of the total value of payments went to larger properties,

30. Miranda *et al.* (2003). *op.cit.*
32. Albán and Argüello (2004). *op.cit.*
31. Rojas and Aylward (2003). *op.cit.*

with more than 70 hectares enrolled in the scheme.[32]

Reducing the costs of participation

Even where small landowners and communities are able to access market schemes, the payments received may be swamped by the costs involved. These costs are of two types: the transaction costs of applying to the scheme and the costs of changing land management practices to meet the requirements of the scheme. Transaction costs can be considerable and are likely to be proportionately greater for smallholders. In Costa Rica, participants in the PES scheme have an option of using an intermediary organisation to deal with the application process, although in return they must hand over 12-18 per cent of the payments they receive. In the Virilla watershed, 80 per cent of participants were using intermediaries.[33] Where participants make the application themselves, it may require several trips to the national capital to obtain the necessary documents, as in the case of the PROFAFOR scheme in Ecuador. More significantly in the case of the Costa Rica, any land to be enrolled in the PES scheme must remain idle while the application is processed. The time lag from submitting an application to receipt of PES payments can take up to 12 months, a very large disincentive for the poorest landowners.

Little is known about the opportunity costs of meeting the land management requirements of market initiatives, and whether participants are better off financially. The assumption is that if landowners freely choose to enter a scheme, they must perceive net financial benefits from doing so. However, this calculation can be quite complex, particularly when a new and unfamiliar form of land use is involved, such as forestry. In both the Huetar Norte scheme in Costa Rica and the PROFAFOR scheme in Ecuador, poor quality soils and limited access to markets implies that agriculture and livestock options are limited. However, the main financial benefit from entering the payment scheme is

Little is known about the opportunity costs of meeting the land management requirements of market initiatives, and whether participants are better off financially. The assumption is that if landowners freely choose to enter a scheme, they must perceive net financial benefits from doing so

32. Miranda *et al.* (2003). *op.cit.*
33. *ibid.*

expected from timber sales and these will not take place for a number of years.

Minimising employment losses

Among the many indirect linkages between markets for ecosystem services and the poor is the impact on rural employment. On the supply side, land use activities that produce ecosystem services, which may be pure conservation or environmentally-friendly production practices, may be more or less labour intensive than alternative uses of natural resources. The danger, of course, is that a shift to more conservation-oriented land use will reduce demand for unskilled or low-skilled labour, depressing rural wages and exacerbating rural unemployment. This appears to be one impact of the Noel Kempff Mercado Climate Action project in Bolivia, where The Nature Conservancy and a consortium of US companies, together with the Bolivian Government, bought out logging concession owners in order to extend a national park. For surrounding communities the termination of the logging concessions resulted in significant job losses. A specific aim of the project was to create other employment opportunities to offset the jobs lost in logging. This was achieved in two of the three communities neighbouring the park, with community members being employed as park guards, tourist guides or assistants for carbon monitoring.[34] However, employment losses were still perceived by the local communities as problematic.[35]

The danger is that a shift to more conservation-oriented land use will reduce demand for unskilled or low-skilled labour, depressing rural wages and exacerbating rural unemployment

Rural infrastructure and public services

Markets for ecosystem services may have impacts on the development of rural infrastructure that affect the poor. For example, they are unlikely to require, and may actually discourage, the construction of roads in rural areas, in contrast to logging, mining and other uses of forest resources which typically require road access. While this implies less risk of agricultural encroachment or hunting, it

34. Asquith, N.M., Vargas Rios, M.T., and Smith, J. (2002). 'Can forest-protection carbon projects improve rural livelihoods? Analysis of the Noel Kempff Mercado Climate Action Project, Bolivia.' *Mitigation and Adaptation Strategies for Global Change* 7 :323-337
35. May *et al.* (2004). *op.cit.*

also means that local populations will not enjoy the benefits that roads bring, such as improved access to markets and social services. In the case of the Noel Kempff project in Bolivia, for example, public roads deteriorated after the termination of the logging concessions and transport costs for local communities consequently increased.[36] In Huetar Norte, a different problem has emerged. In this case the increase in wood processing has led to intensified use of roads and deterioration in their quality. This affects participants in the scheme as well as agricultural producers in the region who are not enrolled.[37]

Access to land and other resources

Another risk of markets for ecosystem services is that changes in land use or production practices, or increased protection of natural resources, may exclude or reduce access by the poor to natural resources on which they have traditionally relied, such as non-timber forest products. In the case of Noel Kempff some community members were initially concerned about restrictions on hunting due to the expansion of the national park. This also reflected weaknesses in communication and consultation in the early stages of the initiative.

Changes in land use or production practices, or increased protection of natural resources, may exclude or reduce access by the poor to natural resources on which they have traditionally relied, such as non-timber forest products

A related risk concerns the impact of market schemes on patterns of land ownership. Where there are large scale economies in the production of ecosystem services (as appears to be the case for carbon), new markets may lead to greater concentration of land ownership or the exclusion of existing small-scale land users. This concern appears to be valid for some carbon projects in Brazil, partly because of the rules of the CDM. These restrict eligibility for carbon credits to land that was deforested before 1990 and may stimulate land purchases by companies seeking carbon credits. For example, the Plantar project in Minas Gerais generates carbon credits through reforestation with eucalyptus and by continuing to use charcoal in pig iron production rather than switching to coke. A recent case

36. May *et al.* (2004). *op.cit.*
37. Miranda *et al.* (forthcoming). *op.cit.*

study found that the company preferred to carry out reforestation on its own land rather than encouraging local farmers to get involved in reforestation and the sale of carbon credits. The view expressed by company officials was that their approach – which minimised costs – was more likely to meet the requirements of investors (in this case, the prototype carbon fund of the World Bank).

Ecosystem service consumers and poverty

The poor are not only potential suppliers of ecosystem services but also consumers. If a new payment scheme involves transfers from beneficiaries or users of ecosystem services to providers, some relatively poor users might end up paying money they can ill-afford to some relatively well-off providers. The extent of such regressive transfers will depend on the share of ecosystem services in the overall consumption basket of the poor, and on the availability of substitutes. This issue is probably most relevant to watershed services, where buyers are likely to be local farmers or urban users of water. There might be concern, for example, if payments for watershed protection led to significantly higher prices for irrigation water used by farmers. In practice, however, this is likely to be a smaller problem than the risk that the same farmers might lose their water use rights due to rising demand from urban and industrial water users.

If a new payment scheme involves transfers from beneficiaries or users of ecosystem services to providers, some relatively poor users might end up paying money they can ill-afford to some relatively well-off providers

Little empirical evidence is available to assess the significance of this risk. In the Pimampiro payment scheme in Ecuador, payments were financed through a 20 per cent increase in the water tariff for town residents. The price increase however, coincided with an improvement in the water supply system resulting from infrastructure investments. As a result, water users in the town accepted the increase. For most other ecosystem services, it seems likely that the impact of payment schemes on the costs of life's basic necessities will be modest.

4. CONCLUSIONS AND WAYS FORWARD

With respect to the impacts of market-based incentives for ecosystem services on the poor, we can take some comfort

from an overall increase in transfers from richer segments of the economy to less affluent segments. On the other hand, there is reason to worry that the truly poor may find themselves unable to participate as suppliers of ecosystem services, displaced from their jobs, and cut off from natural resources that they previously exploited (either sustainably or otherwise).

Despite efforts by a number of researchers to examine the poverty impacts of market mechanisms, the empirical evidence is still patchy, mainly due to the relative novelty of most schemes. In particular, more information is needed on the indirect effects of such schemes on those who are not involved as sellers of environmental services, as well as the long-term financial returns to suppliers, which will determine whether poorer landowners continue to be willing participants in payment initiatives.

Extra care must be taken to ensure that poverty is not exacerbated by such initiatives and, if possible, to assist the poor to participate actively as suppliers

There is no evidence to suggest that market-based schemes should be rejected on social equity grounds. However, it is also clear that extra care must be taken to ensure that poverty is not exacerbated by such initiatives and, if possible, to assist the poor to participate actively as suppliers. From the existing limited evidence, some preliminary recommendations can be made for enhancing the contribution of market schemes to the achievement of the MDGs.

The first priority is to facilitate access by small landholders to existing or new payment schemes. This requires scheme administrators and proponents to:

- Reconsider rules relating to tenure and size of landholdings so that those with informal tenure or very small areas of land can participate. This may also mean introducing contracts for shorter periods.
- Reconsider land and resource use restrictions – find ways of reconciling buyer preferences with the concerns of small landholders and local knowledge of the impact of land and resource use practices.

- Encourage the participation of small landholders in the supply of environment services (carbon sequestration in particular) through partnerships and outgrower arrangements with companies.
- Reduce transaction costs for small landholders by encouraging group applications or simplifying requirements and procedures.
- Improve co-ordination with land reform processes to ensure that the provision of environmental services is promoted as one of a number of land use options for land beneficiaries.

Another challenge is to ensure that once small landholders join a market initiative they are able to sustain their involvement and derive net benefits on a long-term basis. The main requirements here are for:

- Improved information to participants about the options open to them and the financial and land use implications of the scheme.
- Capacity building to ensure that participants are able to carry out any new activities involved. This will help to minimise early mistakes and losses which poorer households and communities are less able to support.

Finally, the successful experience of recent market initiatives must be seen in context. Some schemes have benefited small landholders financially or have contributed to poverty reduction in other ways, for example by accelerating the process of land titling or strengthening local organisations. The number of people affected by such schemes, however, remains very small relative to the numbers of people living in poverty. Existing initiatives show the possibilities but a major challenge will be to spread and scale them up – an issue addressed in Chapter 8.

5

Reconciling Global and Local Priorities for Conservation and Development

Sonja Vermeulen, IIED

If you love tigers so much, why don't you shift all of them to Hyderabad and declare that city a tiger reserve?[1]

1. A NEW ASCENDANCY FOR LOCAL PRIORITIES IN CONSERVATION?

'People-centred conservation' is now firmly at the centre of international environmental policy discourse, after decades of dispute. Most recently, the 2003 World Parks Congress put forward the overarching principles that 'biodiversity should be conserved both for its value as a local livelihoods resource and as a national and global public good' and that 'equitable sharing of the costs and benefits of protected areas should be ensured at local, national and global levels.'[2] The Convention on Biological

1. Anonymous Chenchu hunter-gatherer, quoted in Guha, R. (1997). 'The authoritarian biologist and the arrogance of anti-humanism: wildlife conservation in the Third World'. *The Ecologist* 27: 14-19.
2. IUCN (2003). *Recommendation 29: Poverty and Protected Areas*. World Parks Congress. http://www.iucn.org/themes/wcpa/wpc2003/pdfs/outputs/recommendations/approved/english/html/r29.htm

Diversity (CBD) similarly calls for equitable benefit sharing, and has as its core mechanism the holistic 'Ecosystem Approach' (see Chapter 6), which draws on multiple interest groups within society and relies on local management institutions as far as possible. Bilateral donors and finance agencies (for example the OECD, World Bank, IMF, ADB) have jointly committed over the last decade to target development spending towards reduction of poverty.[3]

The first message from these international processes is that conservation must work for poverty alleviation. Allied to this is a second supporting message that being poor means more than lacking income: poverty has many facets and can be tackled through investments along a variety of routes towards development, particularly in healthcare and education. The range of targets and indicators of the Millennium Development Goals (MDGs) reflect this broad understanding of poverty. Importantly, multi-dimensional approaches to poverty reduction recognise that being poor means not just fewer goods and services, but exclusion from social decision-making – in other words, lack of power. In recognition that poverty is as much about political as economic marginalisation, international environmental policy processes call for 'strengthening mechanisms for the poor to share actively in decision making…and to be empowered as conservators in their own right'[4] and for 'freedom and choice' to be understood as a central component of human well-being and poverty reduction.[5]

Being poor means more than lacking income: poverty has many facets and can be tackled through investments along a variety of routes towards development, particularly in healthcare and education

All of these international processes provide a forceful and widely legitimised framework for a people-centred conservation in which the viewpoints and choices of poor people are taken seriously. This chapter outlines some of the key areas in which progress can be made to take up the practical challenges of reconciling global and local priorities for conservation and development.

3. OECD (1996). ***Shaping the 21st Century: The Contribution of Development Co-operation.*** **Organisation for Economic Co-operation and Development, Washington DC, USA.**
4. WPC (2003). ***op.cit.***
5. Millennium Ecosystem Assessment (2003). ***Ecosystems and Human Well-being: A Framework for Assessment.*** **Island Press, Washington DC, USA.**

2. DIFFERENT PERCEPTIONS OF BIODIVERSITY VALUES

In general usage, conservation of biodiversity means sustaining total biological variety for the global public good. But neither 'conservation' nor 'biodiversity' has a single agreed meaning.[6] Local understandings of ecosystems and values attached to biological diversity are by definition specific and unique – not just to ethnic groups or communities, but to individuals within those communities. Nonetheless it is useful to generalise some of the salient features of internationally dominant values compared with the kinds of values more likely to be shared by poor rural communities – but not often made explicit (Table 5.1).

Local conservation priorities are likely to be very different to international concepts, focusing on the direct use values of biodiversity and its cultural associations rather than the continued existence of internationally rare species or habitats. Direct use values accrue from the benefits of a

Table 5.1. Contrasts between global and local biodiversity perceptions and priorities

Global biodiversity values	Local biodiversity values
Indirect-use (environmental services) and non-use values (option and bequest values) are primary concerns	Direct-use values (in providing a variety of foods, medicines and other uses) as, or more, important than indirect-use and non-use
Ideal of conservation, with or without sustainable use	Ideal of sustainable use, with or without conservation benefits
Benefits of and priorities for biodiversity management are shared by humankind generally	Biodiversity values have immediate ties to people's sense of place and culture, and specific groups have specific priorities
Endemics (species that occur locally only) and other rare species given high values	Global endemics no more important than other species
Focus on genotypes (genetic information)	Focus on phenotypes (observable qualities)
Wild and agricultural diversity treated separately	No clear boundary between wild and agricultural biodiversity
Focus on biodiversity in protected areas and wilderness	Focus on biodiversity in multi-use landscapes

Source: Adapted from Vermeulen, and Koziell (2002). *op.cit.*

6. **Vermeulen, S. and I. Koziell (2002).** ***Integrating Global and Local Biodiversity Values: A Review of Biodiversity Assessment.*** **IIED, London, UK.**

wide range of raw materials – foodstuffs, medicines, building materials and fodder for livestock – particularly during critical periods when staples are not available, such as dry seasons or droughts. Cultural values can range from specific meanings or taboos associated with plants or animals through to cosmologies that locate people as inseparable from nature. Distinctions between tame and wild, a crux of western conservation, are less meaningful to many rural communities, who farm forest gardens or gather food widely. Overall, the active, use-oriented attitudes to nature usual at local levels might enable a more dynamic approach to conservation than external interventions based on broad-scale taxonomic understandings.

Distinctions between tame and wild, a crux of western conservation, are less meaningful to many rural communities, who farm forest gardens or gather food widely

Some aspects of local people's relationships with biodiversity are well documented – particularly local uses of, and local knowledge of, species and ecosystems. Other aspects have received far less attention – particularly the choices, preferences or priorities that people might have for biodiversity management. Much research into local biodiversity values has depended on observation of patterns of harvesting and use, without triangulating these results through interviews, discussions or other techniques that simply ask people what they want. Consequently, a lot of what is said about the possibilities for reconciliation between global and local priorities for conservation and development is based on scant understanding of what local priorities might be in any given locale.

Fortunately, excellent tools for assessing and communicating local understandings of and priorities for biodiversity are beginning to be developed and tested.[7] Joint planning, action and monitoring between external and local partners have proved to be powerful means to reconcile differing viewpoints and develop a shared sense of purpose.[8] Even a simple checklist (Table 5.2) can provide a

7. Sheil, D. *et al.* (2002). *Exploring Biological Diversity, Environment and Local People's Perspectives in Forest Landscapes*. Centre for International Forestry Research, Bogor, Indonesia; Community Conservation Coalition (2003). *Putting Conservation in Context: Social Science Tools for Conservation Practitioners*. Community Conservation Coalition, Washington DC, USA.
8. Lawrence, A., Wells, A., Gillett, S. and J.van Rijsoort (2003). *Participatory Assessment, Monitoring and Evaluation of Biodiversity: A Briefing Paper for Planners, Policy Makers and Advisors*. Environmental Change Institute, University of Oxford.

useful framework to enable a more holistic understanding of local biodiversity values and act as a starting point in negotiating equitable sharing of the costs and benefits of biodiversity management.

Table 5.2. Checklist of possible local biodiversity issues

Access	**Non-use values**
◆ Local land rights: legal ownership of different land types, customary ownership, distribution among communities and among/within households	◆ Environmental services: perceived roles in microclimate regulation, air and water purification, regulation of water flows (both floods and dry season flows), nutrient cycling, pollination, dispersal, disease control
◆ Local resource access rights: bye-laws, rights of access (e.g. seasonal use of privately owned fields), formal or unspoken rules on use and management	◆ Cultural, spiritual and future option values: sacred, heritage and social values associated with nature, landscape beauty, recreation, cultural events and significance of land types and species
Knowledge	**Uses**
◆ Taxonomic and ecological knowledge: species names and distribution patterns; habitat classification, detailed life-cycle and ecosystem knowledge	◆ Uses of land types: residential land, agricultural land, forest land, range land, wetlands, rivers, sea
◆ Non-biological knowledge: knowledge of threats, rights, external policies and contexts and means to influence these	◆ Uses of species and sub-species varieties: crops, livestock, wild flora and fungi, wild fauna
Risks and costs	**Choices**
◆ Costs: opportunity costs due to land allocation, labour and other costs associated with existing and proposed biodiversity management	◆ Preferences for land use: stated preferences among alternative land-use and development options
◆ Risks: level of dependency on biological resources, availability of alternatives, threats to resources and to access	◆ Preferences for biodiversity management: stated preferences for various conservation and sustainable-use management approaches, identification of opportunities and challenges

Source: Vermeulen, S. (2004). *Biodiversity Planning: Why and How Should Local Opinions Matter?* Gatekeeper series 115. IIED, London, UK.

3. STRATEGIES FOR RECONCILING TRADE-OFFS AND BUILDING ON SYNERGIES

Much of the debate around synergies and trade-offs between conservation and local development is coloured by explicit or implicit assumptions as to whether local people's participation in decision-making is a means to better

conservation or an end in itself (Box 5.1). Both pro-conservation and pro-development lobbies place emphasis on win-win outcomes between conservation for the global public good and development for the local good while avoiding politically uncomfortable positions as to which of these outcomes is their primary goal. But strategies and tools for reconciling global and local priorities for conservation and development will be more likely to succeed if different stakeholders are able to state clearly their ultimate aims and preferences in given trade-off scenarios – such as situations in which local people choose short-term economic gains over longer-term conservation.

Box 5.1: Summary of arguments for local participation in decision-making[9]

Justifications for local participation can be divided into two classes of rationale:

- The normative / ethical rationale is that social structures and processes should reflect moral norms.
- Decision-making processes should be legitimate and subject to democratic control (governance argument).
- Costs and benefits of extraction and management should be distributed equitably (distribution argument).
- The instrumental / pragmatic rationale is that participation can decrease conflict and increase acceptance of or trust in the management process. Opportunities occur as new interest groups are positively engaged in the process.
- In worst-case scenarios, shared decision-making will reduce the negative impacts of local activities (mitigation argument).
- In best-case scenarios, participation by diverse groups and individuals will provide essential information and insights about risks and consideration of the social, cultural and political values that will be as important as technical considerations in determining outcomes (synergy argument).∑

Source: Fiorino, D.J. (1989).

Local interest groups in particular can benefit from a more transparent understanding of the goals and motives of external agencies that become involved in local biodiversity management ('local knowledge' in its broad sense includes this kind of understanding of external policies – see Table 5.2). One useful tool to help navigate the jargon of conservation and development projects and policies is a

9. A related but different categorisation of rationales for public participation distinguishes normative (associated with what is right and wrong), substantive (associated with information needed for the decision) and instrumental (associated with achievement of other related goals) rationales. 'Environmental risk and democratic process: a critical review'. *Columbian Journal of Environmental Law* 14: 501-547.

typology based on the continuum from 'poverty reduction as a tool for conservation' to 'conservation as a tool for poverty reduction' approaches (Table 5.3). Making the normative rationale for local participation in biodiversity decision-making more explicit can be a useful policy tool in itself, for example by legitimising assessments of integrated conservation and development projects in terms of outcomes to 'good governance' (e.g. representation, accountability) rather than simply in terms of habitat or species preservation, or immediate local economic effects.

Table 5.3. A typology of pro-poor conservation[12]

Type	Components	Examples	
Use poverty reduction as a tool for conservation	Recognition that poverty issues need to be addressed in order to deliver on conservation objectives. Poverty is a constraint to conservation.	Alternative income generating projects; many integrated conservation and development projects; many community-based conservation approaches.	approach becomes increasingly active ↓
Compensate fully, and mitigate, negative impacts of conservation on poor people, and make policy transparent	Conservation agencies recognise that conservation can have negative impacts on the poor and seek to provide full compensation where these occur and/or mitigate their effects.	Social impact assessments prior to protected area designations; compensation for wildlife damage; provision of locally acceptable alternatives when access to resources lost or reduced; compensation for land foregone.	
Adapt conservation to generate new benefits for poor people	Conservation still seen as the overall objective but designed so that benefits for poor people are generated.	Revenue sharing schemes around protected areas or wildlife tourism enterprises; employment of local people in conservation jobs.	
Use conservation as a tool for poverty reduction	Poverty reduction and social justice issues are the overall objectives. Conservation is seen as a tool to deliver these objectives.	Conservation of medicinal plants for healthcare, wild species as food supplies, sacred groves, pro-poor wildlife tourism.	

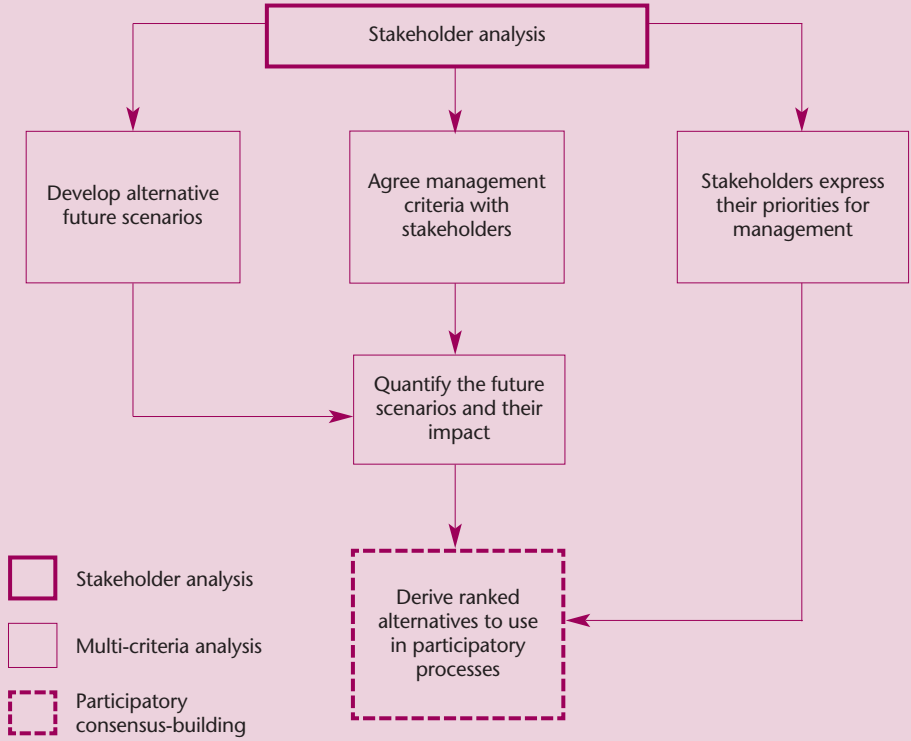
Source: PCWG (2003). 'Pro-poor conservation: harnessing conservation for poverty reduction'. Poverty and Conservation Working Group, mimeo. Paper produced for the World Parks Congress 2003.

The coastal management sector in the Caribbean provides a useful example of how trade-offs – among stakeholders, and between conservation and development – might be

identified and negotiated in practice (Figure 5.1). A multi-step process enables stakeholders to: compare alternative scenarios; prioritise their own environmental, social and economic values; and finally to express these priorities in transparent quantitative terms that they can tally against the priorities of other groups. This kind of combined qualitative-quantitative, within-group-among-group process can form the basis of long-term consensus-building.

Negotiated compromises are often the only real management strategy. But global and local priorities are not always in conflict. Much is made of the disparity between priorities for global conservation and local development. There exist, however, real synergies between priorities for

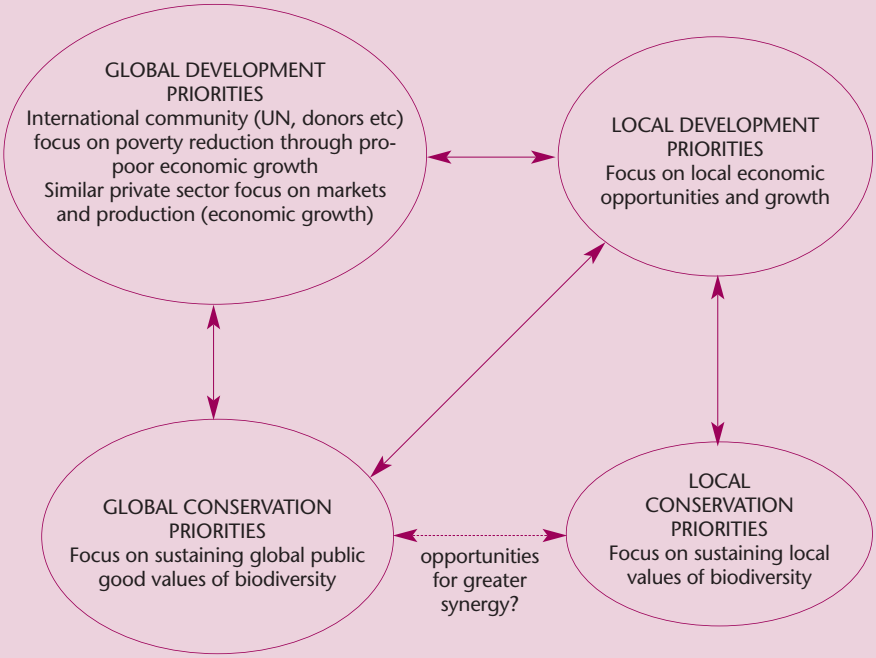
Figure 5.1. Stages in the trade-off analysis process



13. Brown, K., Tompkins, E. L. and Adger, W.N. (2002). *Making waves: integrating coastal conservation and development.* Earthscan, London, UK.

global conservation and local conservation (Figure 5.2). An alternative to using global conservation priorities as the starting point for interventions at local levels is to use local conservation preferences and practices as the starting point.[10] This builds on principles of democracy and partnership. Taking these concepts further, partnerships between local and global conservation interests can combine local legitimacy with international lobbying networks to address the root causes of declining biodiversity. These causes are not, as often implied or assumed, local in origin, but rather due to global development patterns: increasing social inequity and global over-consumption.[11]

Figure 5.2. Conservation and development priorities globally and locally



10. Sheil, D. and Vermeulen, S. (2004). 'Tropical conservation through democracy'. Submitted journal paper. Centre for International Forestry Research, Bogor, Indonesia, and IIED, London, UK.
11. Stedman-Edwards, P. (1998). *Root Causes of Biodiversity Loss: an Analytical Approach*. Macroeconomics for Sustainable Development Program Office (MPO), World Wide Fund for Nature, Washington DC, USA.

4. BUILDING CAPACITY AND LEGITIMACY FROM LOCAL TO INTERNATIONAL LEVELS

Tools for marginalised and disempowered groups (such as local biodiversity interest groups) to increase their positive impacts on relevant policy processes abound,[12] though they are not always recognised as 'tools' or shared successfully through networks. Appropriate development of capacity building will build on local strengths in a variety of areas, such as:

- Social organisation (how to get local institutions right – with legitimised and workable representation);
- Defence of local preferences and conservation practices;
- Information access and management;
- Negotiation techniques to engage successfully with more powerful groups;
- Practical management skills in both conservation and administration.

Many conservation initiatives engage locally on 'the assumption that they are dealing with local people with legitimate rights to the ownership and control of their natural resources' – while in fact the broader frameworks that might legitimise those rights are entirely lacking

More powerful groups can use identical or equivalent tools, such as the array of effective methods for stakeholder analysis, to analyse and mitigate their own influence (of course, such tools can also be used tactically to imbalance power further).

Tools, however, are not enough. Many conservation initiatives engage locally on 'the assumption that they are dealing with local people with legitimate rights to the ownership and control of their natural resources' – while in fact the broader frameworks that might legitimise those rights are entirely lacking.[13] Tactical tools are of little value without higher-level strategies to strengthen governance, particularly at national levels. These are long-term goals: many who rally for equity in conservation decision-making would argue that solutions lie outside the 'sector' in much bigger issues of how society can shape governments and

12. IIED (2004). *Power Tools*. www.iied.org/forestry/tools
13. Colchester, M. (1997). 'Salvaging nature: indigenous peoples and protected areas'. pp 97-130 in K.B. Ghimire, and M.P. Pimbert (eds.). *Social Change & Conservation*, Earthscan, London, UK.

markets. Commentators on conservation have made a powerful case that the true challenge in modern environmental governance is to move from 'public opinion' to 'public judgment'[14] or from 'participation' to 'deliberation'.[15]

Well-intentioned efforts to increase local involvement in decision-making are often built on simple models of roundtable multi-stakeholder dialogue. But less powerful groups are disadvantaged within such dialogue – to the extent that it may be in their best interests to take careful tactical stands within discussions, or not to participate at all.[16] Stakeholders seeking pluralism need to build it actively, through developing capacity among disadvantaged groups as well as structuring the 'roundtable' to limit the dominance of the powerful.

Well-intentioned efforts to increase local involvement in decision-making are often built on simple models of roundtable multi-stakeholder dialogue

Of course, local values and opinions are not the only priorities that count. Institutions to manage biodiversity should be matched in scale to relevant landscapes or ecosystems – as advocated by the CBD in the ecosystem approach (Chapter 6). Biodiversity, as a global public good, requires appropriate institutional responsibilities at different scales rather than full devolution of authority to the most local levels. A major question is how far we can generalise across contexts: how similar are different sets of local biodiversity values and preferences and how can successful initiatives be spread? (see Chapter 8). These issues of scale call for capacity building not just at local levels, but also in the agencies responsible for national and international biodiversity decisions. Allowing local self-determination in biodiversity management but also meeting the needs of the global public good suggests the need for 'loose-tight' models of management, in which local flexibility operates within a set of strong, accountable, agreed principles nationally or internationally.

14. Costanza, R. (2001). 'Visions, values, valuation, and the need for an ecological economics'. BioScience 51: 459-468.
15. Brown, K., Tompkins, E. L. and Adger, W.N. (2002). Making Waves: Integrating Coastal Conservation and Development. Earthscan, London, UK.
16. Edmunds, D. and Wollenberg, E. (2001). 'A strategic approach to multistakeholder negotiations'. Development and Change 32: 231-253.

5. MOVING FORWARD

Reconciling global and local priorities for conservation and development challenges practitioners to take action on a number of fronts, as this chapter describes:

- Interrogating the dominance of 'global public good' understandings of biodiversity value.
- Seeking local opinions on, and priorities for, conservation.
- Achieving greater clarity on reasons for local participation.
- Making power dynamics explicit and developing tools to tackle them.
- Developing legitimate frameworks for negotiating conservation and development trade-offs.
- Recognising synergies between global and local conservation values.
- Building capacity and legitimacy at national and international levels.

Indicators are always open to criticism, in part because they are so difficult to choose: they need to be not only relevant to the goals they measure, but sensitive to change, concise, unambiguous, repeatable and practicable

The Millennium Development Goals, and the targets and indicators they encompass, present their own challenges. Indicators are always open to criticism, in part because they are so difficult to choose: they need to be not only relevant to the goals they measure, but sensitive to change, concise, unambiguous, repeatable and practicable. The indicators proposed for the MDGs are currently under particular scrutiny. Recent analyses of the coverage of biodiversity, and natural resources more generally, within the MDGs have noted that:[17]

- The indicators are outcome-oriented and do not address how the goals might be achieved (e.g. acknowledging the centrality of local processes).
- MDG 7 on environment reflects simple global public good outcomes with quantitative targets for forest cover

17. Roe, D. (2003). 'The Millennium Development Goals and natural resources management: reconciling sustainable livelihoods and resource conservation or fuelling a divide?' pp 55-71 in Satterthwaite, D. (ed).*The Millennium Development Goals and Local Processes: Hitting the Target or Missing the Point?* IIED, London, UK.

and protected areas that do not address the quality of contributions to poverty reduction or conservation.

- Biodiversity and environment are integral to all of the MDGs and could be mainstreamed (see Chapter 9).

One way forward here is to lobby for alternative or further indicators that are relevant to local priorities for natural resources and biodiversity. One indicator in the Ugandan poverty reduction strategy has proven to be 'average distance to collect firewood' – a resonant measure of resource availability in a country where more than 90 per cent of people use firewood as their domestic fuel.[18] An alternative to new indicators is to be at all times cautious to interpret the indicators within broader contexts of the distribution of costs and benefits within society locally and globally.

People-centred conservation does not mean that the agendas of poor people must override the role of conservation in other key social aspirations such as environmental sustainability. But it does mean that the trade-offs and commonalities between local goals and global goals, between goals of conservation and goals of development, need to be given greater – and more incisive – attention than has been the case in the past so that differences in perceptions and priorities can be turned from a problem into an asset.

18. A newly proposed indicator for MDG7 is in fact the proportion of a country's population using biomass fuels – the target being to move *away* from renewable biomass energy to other energy sources, with the rationale of decreasing indoor air pollution.

Case Study 3

Using Analysis and Advocacy to Bring About Policy Change in Indonesia[1]

At the start of the WWF-Macroeconomics Program Office's (MPO) Economic Change, Poverty and Environment (ECPE) project in Indonesia in 2001, WWF-Indonesia was seeking to expand local natural resource management efforts that were part of existing integrated conservation and development programmes (ICDPs) in the Nusa Tenggara region. For example problems in protected forests had been growing as more and more people were migrating to the margins of protected forests and engaging in agriculture within the protected area. Small experimental community forestry projects seemed insignificant in the face of the tide of encroachments and land clearance by people in search of small plot of land and livelihood.

A detailed analysis revealed that localised efforts at land use planning were unlikely to succeed within the existing policy and institutional framework for forest management at the national level. Despite decentralisation of protected forest management to the district level, community participation was being actively restricted by the national government regulations. At the same time, district governments with little experience in forest management, had begun relying on forests to finance their budgets. Reliance on forests for their revenue, when combined with a huge demand for wood from nearby urban areas, had created incentives for local governments to bend rules and allow business interests to gain access to forest land. To appease local residents, areas within the forest were also being made available to them without much consideration for how that would impact on the forest.

1. Case study supplied by Dawn Montanye, WWF Macroeconomics Program Office, Washington DC and Tri Agung Rooswiadjie and Klaas jan Tuele, WWF-Indonesia

The national policies and regulations governing access to forests by local communities were riddled with contradictions and ambiguity. Thus, though in principle the forestry department has a scheme to promote community-based forest management, this has remained at a localised pilot level, and not part of any systematic implementation. Given the political exclusion and marginalisation of poor farmers, this is not surprising. However, the fact that a recognition of community-based forest management exists on paper, and may be one of the most important forestry policy developments in Indonesia in the past half century, was used in this project to bring a coherent basis for its implementation in practice.

A two-pronged approach was adopted. The primary effort was on improvement of regulations at the national level to give locally elected bodies a say in forest management. This was supplemented by an equally critical local effort aimed at building local advocacy skills to raise awareness amongst district parliaments about the benefits of community-based forest management and 'best' practices emerging from ongoing pilot schemes.

Significant progress has been achieved in a short span of time at both national and local levels. At the national level, a new social forestry policy was finalised in July 2004, while at the local level, two district governments in Nusa Tenggara have developed their own regulations for community forestry management. Key to both developments was involvement and consultation with a broad range of stakeholders including government, members of parliament at regional level, NGOs, academics, community representatives, local farmers and the private sector. Central to the success of this effort was the commitment of WWF-Indonesia to integrate conservation and poverty reduction as an integral part of its mandate, and to build relevant institutional capacity to respond to the substantive as well as policy engagement needs of this challenging task. Success also required a synergy between analysis and action at multiple scales, and ability to tap expertise to link the local poverty-environment dynamic to these. Using solid analysis as the basis for action turned out to be essential for building partnerships, for identifying strategic interventions, and for making an effective case for advocacy and policy reform.

6

Sustainable Landscapes – Linking Conservation and Production

Jeffrey A. McNeely, IUCN The World Conservation Union

Biodiversity preservation and improved agricultural productivity are not only compatible, but actually mutually reinforcing in a very wide range of settings.[1]

1. INTRODUCTION

Approaches being developed under many biodiversity-related international agreements and programmes call for ecosystems to be managed to meet multiple national objectives, including providing timber, forage, fibre, and energy, retaining options for future economic use, carrying out various ecosystem services, providing ethical and aesthetic values, and supplying that nation's share of global benefits.[2] Achieving these sometimes-conflicting objectives in a time of rising expectations and shrinking government budgets will require new approaches. One

1. Jeffrey D. Sachs, Director, Earth Institute at Columbia University
2. Millennium Ecosystem Assessment (2003). *Millennium Ecosystem Assessment*. Island Press, Washington D.C.

such approach is the concept of 'sustainable landscapes'. This chapter examines the 'ecosystem approach' – as advocated by the Convention on Biological Diversity (CBD) – as the conceptual framework for sustainable landscapes and then explores 'ecoagriculture' as a practical example of the approach in practice.

2. CONSERVATION AND PRODUCTIVE LANDSCAPES

For the first time in a binding international instrument, the CBD recognises the intrinsic value of biological diversity along with its ecological, genetic, social, economic, scientific, educational, cultural, recreational, and aesthetic values. The Convention gives considerable attention to the benefits people derive from the sustainable use of biological resources.

The people who use these biological resources have many different needs, interests, cultures, and goals. The global industrial society which characterises our modern world has a tremendous appetite for the consumption of these resources as commodities. The forested areas where species diversity is richest often are remote from the centres of power, but the people who live in these areas are significantly influenced by economic decisions taken in distant capitals that affect markets for biological resources. And forest residents will themselves make decisions about resources that may sometimes result in the conversion of a forest into another form of land use or the local extinction of a species (though the evidence indicates that local people who have long lived on the land relatively seldom cause such extinctions).

The forested areas where species diversity is richest often are remote from the centres of power, but the people who live in these areas are significantly influenced by economic decisions taken in distant capitals that affect markets for biological resources

New research on how ecosystems work is being applied to conservation of biodiversity. This research is finding that many ecosystems are loose, temporary assemblages of species that each behave according to their own needs, depending on their specific physiology, morphology, demography, behaviour, and dispersal capacity. 'Because of a continual turnover of ecological conditions, local communities show a continual turnover of species, at one time gaining species because the scale of processes allows a

certain type of trait, and at others losing them again because the same trait happens to have resulted in too great a risk of extinction. Biodiversity is both the result and expression of all sorts of adaptations of life to the environmental turmoils; it can only be maintained as long as this turmoil exists'.[3] These new insights are the basis of managing dynamic ecosystems as a whole, recognising the many different habitat structures found in nature.[4] Because ecosystems are dynamic, highly complex and unique to the site where they are located, it is not sufficient to conserve just one minimum viable population of a species, or just one example of an ecosystem. Instead, we need approaches to conserving biodiversity that recognise the dynamism of systems, the dependence of local people on their natural resources, and the need to build redundancy into our systems of protecting biodiversity.

We need approaches to conserving biodiversity that recognise the dynamism of systems, the dependence of local people on their natural resources, and the need to build redundancy into our systems of protecting biodiversity

3. THE ECOSYSTEM APPROACH TO SUSTAINABLE LANDSCAPES

The conceptual framework for sustainable landscapes arises from the 'ecosystem approach', as developed under the CBD. The ecosystem approach recognises that ecosystems must be managed as a whole, with protected areas serving as reservoirs of wild biodiversity in a 'matrix' of land that is managed to enhance its habitat value, while also providing a range of benefits to people such as food supply and income for ecosystem services. Biodiversity protection in an ecosystem management framework calls for a co-ordinated strategy that clarifies objectives, goals and investment strategies for protected areas and other land uses that influence the way people use resources. It encourages protected areas to be integrated fully within key planning frameworks, including land use and development plans, national biodiversity strategies and action plans, and strategic plans for relevant sectors (including agriculture, forestry, fisheries, tourism, energy, transport, and even the

3.Hengeveld, R. (1994). 'Biodiversity: The diversification of life in a non-equilibrium world'. *Biodiversity Letters* 2:1-10.
4. Oliver, C.D., and B.C. Larson (1996). *Forest Stand Dynamics*. Updated Edition. John Wiley and Sons.

military). Within this integrated strategy, agricultural lands need to be managed as part of the matrix surrounding protected areas, while the protected areas are managed as part of the matrix surrounding agricultural lands. Critical habitat features for wild biodiversity are thereby maintained.

Related terms that are used by some environmental planners include 'bioregional planning', 'ecoregion-based conservation', 'the ecosystem approach', 'an ecosystem-based approach', 'integrated conservation and development projects' (ICDP), 'biosphere reserves', 'landscape ecology', and 'integrated coastal zone management'; all are based on more comprehensive approaches to resource management. This idea that conservation problems should be addressed in whole ecological or landscape units based on integrated biological, physical, and socio-economic assessments stretches back at least into the 1960s, but it could be argued that this has been the de facto approach of stable rural communities throughout history.

Sustaining multiple use over significant periods of time is challenging within a small area. But over a larger landscape, various lands can be allocated to different dominant uses, with all land uses contributing to the overall objectives of ecosystem management

Sustaining multiple use over significant periods of time is challenging within a small area. But over a larger landscape, various lands can be allocated to different dominant uses, with all land uses contributing to the overall objectives of ecosystem management. Ecosystem management provides a comprehensive framework for bringing together a wide range of different approaches to conservation, helping to integrate or co-ordinate the various sectors with an interest in biodiversity. The scope of ecosystem management efforts may include activities across the entire land and waterscape, crossing ownership, political, and even international boundaries. Conserving a species of rare or threatened plant, for example, involves conserving other parts of its ecosystem, including pollinators, seed dispersers and other organisms that play significant roles in the lifecycle of the plant. Ecosystem analysis can help decision-makers consider options for landscape-scale developments. The ecosystem approach implies inter-sectoral co-operation; decentralisation of management to the lowest level appropriate; equitable distribution of benefits; use of

adaptive management policies that can deal with uncertainties and are modified in the light of experience and changing conditions; and a multi-disciplinary approach that takes into account scientific, social, and economic issues.[5]

Scientific understanding of ecosystem functioning remains very incomplete. For example, it is not known how much biodiversity can be lost from an ecosystem before essential services (such as nutrient cycling) begin to be affected. Some ecologists argue that the health and stability of ecosystems are correlated with biodiversity, so reducing diversity may compromise the integrity of the system. Others contend that ecosystem properties are determined by the functional traits of dominant species, or the composition of functional groups. This implies that at least some species may be redundant. A more balanced view is that while ecosystem processes may reflect the activities of a few dominant species, systems with greater diversity are more likely to contain the most productive species as well as those which play more subtle roles in the functioning of ecosystems.

Sensible ecosystem management, therefore, calls for conserving all of the elements of the system, recognising that the incompleteness of scientific knowledge makes it risky to lose any of the pieces. Managing ecosystems and landscapes with a unified strategy that addresses the needs of their inhabitants as an integrated whole can be a cost-effective approach to biodiversity conservation. It addresses the worry that a simple focus on managing populations of particular species of interest will cause conservationists to fall farther and farther behind in the overall effort to conserve biodiversity, as funding is unlikely to ever be sufficient to address the individual needs of every species. Models based on new understandings of ecological relationships can help inform ecosystem management that benefits all species, or at least ensures that trade-offs are well-informed decisions.

Managing ecosystems and landscapes with a unified strategy that addresses the needs of their inhabitants as an integrated whole can be a cost-effective approach to biodiversity conservation

5. Slocombe, D. S. (1991). ***An Annotated, Multi-disciplinary Bibliography of Ecosystem Approaches.*** **Cold Regions Research Center; Wilfred Laurier University , Waterloo, Ontario, and IUCN Commission on Environmental Strategy and Planning, Sacramento, CA.**
Grumbine, R.E. (1994). 'What is ecosystem management?' ***Conservation Biology*** **8:27-38.**
Miller, K.R. (1996). ***Balancing the Scales: Guidelines for Increasing Biodiversity's Chances Through Bioregional Management.*** **World Resources Institute, Washington D.C.**

Ecosystem management calls for the emergence of new types of land use planning institutions and tools to co-ordinate public and private investment, regulate zoning, and monitor changes in the condition of biodiversity.[6] Sectoral policies, legal frameworks, and some types of policy instruments to promote biodiversity will typically be developed at the national or state level, ideally with ample consultation and input from stakeholders. However, because so much landscape management – by definition – must be undertaken within a defined geographic area, policy design and governance must be tailored to local conditions, with local input. The old model of watershed or river basin planning, for example, imposed theoretically 'optimal' solutions that had little or no buy-in from actual land managers and were, therefore, often ignored in practice. They left little scope for local experimentation with alternative solutions to achieve environmental goals. New approaches provide more flexibility for on-going adaptation of programme designs, and more opportunities for partnerships with NGOs, public agencies and the private sector.[7] While decision-making draws on the expertise of technical and policy specialists, to estimate the likely outcomes of different options, final policy design will typically reflect a negotiated outcome among different farmer groups, environmental organisations, and other resource user groups.[8] Without a genuine 'buy-in' of stakeholders to policy objectives and strategies, implementation is unlikely to be effective. New techniques of interactive landscape planning can be invaluable in such co-operative processes. The trend towards decentralisation of authority in line agencies could have positive implications for integrating agriculture, forestry and biodiversity, as the sectors would be less compartmentalised and accountability to local stakeholders would be greater.[9]

Without a genuine 'buy-in' of stakeholders to policy objectives and strategies, implementation is unlikely to be effective. New techniques of interactive landscape planning can be invaluable in such co-operative processes

6. McNeely, J.A. (1999). *Mobilizing Broader Support for Asia's Biodiversity: How Civil Society Can Contribute to Protected Area Management*. Asian Development Bank, Manila.
7. Barborak, J.R. (1995). 'Institutional Options for Managing Protected Areas'. pp. 30-38 in McNeely, J.A. (ed.). *Expanding Partnerships in Conservation*. Island Press, Washington D.C.
8. MacKinnon, J., MacKinnon, K., Child, G. and J. Thorsell (1984). *Managing Protected Areas in the Tropics*. IUCN, Gland.
9. Place, F. and A. Waruhiu (2000). *Options for Biodiversity in Eastern and Southern Africa. A report on a regional workshop on 'Mainstreaming Agriculture into Forestry: Towards Systemic Biodiversity policies'*, Nairobi, Kenya, 21-22 November 1999. International Centre for Research in Agroforestry, Nairobi.

4. AGROBIODIVERSITY AND ECOAGRICULTURE

Conventional wisdom holds that modern farming is largely incompatible with wildlife conservation. Thus policies to protect wildlife typically rely on land use segregation, establishing protected areas from which agriculture is excluded (at least legally). Farmers are seen as sources of problems by those promoting this view of wildlife conservation; and indeed farmers may not always appreciate wildlife on their land. However, adopting a sustainable landscapes approach demonstrates that farming systems can make important contributions to biodiversity conservation. These contributions can be enhanced by new technical and policy research.

adopting a sustainable landscapes approach demonstrates that farming systems can make important contributions to biodiversity conservation

Over a third of the global agricultural extent is in high-intensity systems that generally use high levels of agrochemicals for continuous cropping, and often reshape land and waterways. The rest of the agricultural extent is under extensive farming systems that use far fewer inputs, but require relatively large expanses of land to produce relatively low crop and livestock yields. Agriculture is necessary to feed people, but both broad types of agriculture have had notable negative impacts on wild biodiversity:

- Nearly half of all temperate broadleaf forest and tropical and subtropical dry forest, and a third of temperate grass and shrubland, have been lost as wildlife habitat, through conversion to agricultural use; conversion rates are especially high in Asia and Europe.[10]
- Irrigation is practised on over 250 million hectares, and uses over 70 per cent of all freshwater used by people – up to 89 per cent in some low-income countries – often diverting water resources needed by land-based and aquatic wildlife.[11]

10. Williams, P.H. *et al.* (2003). 'Integrating biodiversity priorities with conflicting socio-economic values in the Guinean-Congolian forest region'. *Biodiversity and Conservation* 12: 1297-1320.
11. Postel, S. (1999). *Pillar of Sand: Can the Irrigation Miracle Last?*, WW Norton and Company, New York.

- Over half of the world's wetlands – among the planet's most valuable wildlife habitats – have been converted to agriculture.
- Farming has led to significant soil degradation on 16% of all crop, pasture and forestland worldwide, and half of all land within the agricultural extent, thereby affecting the diversity of soil micro-organisms.[12]
- Excessive use and poor management of crop nutrients, pesticides, and penned livestock wastes are a major cause of habitat pollution that can kill wildlife directly or impair reproduction.

Can ways be found to reduce, or even reverse, the impacts of agriculture on wild biodiversity? Given present agricultural technologies and policies, most farmers can increase biodiversity significantly only by reducing production and livelihood security. Initiatives to promote more ecologically sensitive farming systems (called 'sustainable', 'regenerative', or 'organic' agriculture) are expanding, often with positive impacts on wild biodiversity, but they focus mainly on preserving 'useful' wild species, such as pollinators or beneficial soil microfauna.

Some ecologists calculate that even if the existing protected areas do continue as wildlife habitat, 30-50 per cent of their species may still be lost because such isolated protected areas do not contain large enough populations to be viable, especially for large species with relatively low populations

Such evidence suggests a need to redouble efforts to establish protected areas 'off limits' to agriculture. But this is not sufficient. One review showed that of over 17,000 major sites already devoted to conserving wild biodiversity, 45 per cent (accounting for 20 per cent of total protected land area) have at least 30 per cent of their land used for agriculture. Most of the rest are islands within a 'sea' of agriculture. Some ecologists calculate that even if the existing protected areas do continue as wildlife habitat, 30-50 per cent of their species may still be lost because such isolated protected areas do not contain large enough populations to be viable, especially for large species with relatively low populations.

12. Scherr, SJ. (1999). 'Soil Degradation: A Threat to Developing Country Food Security by 2020?' IFPRI Food, Agriculture and the Environment Discussion Paper 27. International Food Policy Research Institute, Washington, D.C.

An essential strategy for conserving wild biodiversity, especially that found in highly populated, poor rural areas around the world, is to convert agriculture that is destructive of biodiversity into a new type of agriculture: 'ecoagriculture'.[13] Ecoagriculture, which builds on the concept of 'ecosystem management', refers to land-use systems that are managed simultaneously to achieve improved livelihoods, conserve biodiversity, and enhance sustainable production at a landscape scale. For ecoagriculture, enhancing rural livelihoods through more productive and profitable farming systems becomes a core strategy for both agricultural development and conservation of biodiversity.

Ecoagriculture encompasses two sets of strategies for land and resource management. First, it increases wildlife habitat in non-farmed patches in agricultural landscapes, creating mosaics of wild and cultivated land uses, by:

1) Creating new protected areas that also directly benefit local farming communities (by increasing the flow of wild or cultivated products, enhancing locally valued environmental services, or increasing agricultural sustainability);

2) Establishing habitat networks and corridors in 'in-between' spaces that are compatible with farming (such as hedgerows or windbreaks); and

3) Raising the productivity of existing farmland to prevent or reverse conversion of wild lands, along with explicit measures to protect or restore the biodiversity value of uncultivated lands.

Second, ecoagriculture enhances the habitat quality of productive farmlands, by:

4) Reducing agricultural pollution through new methods of nutrient and pest management, and farm and waterway filters;

5) Modifying the management of soil, water and natural vegetation to enhance habitat quality; and

Ecoagriculture refers to land-use systems that are managed simultaneously to achieve improved livelihoods, conserve biodiversity, and enhance sustainable production at a landscape scale

13. McNeely, J.A. and S.J. Scherr (2003). *Ecoagriculture: Strategies to Feed the World and Save Wild Biodiversity*. Island Press, Washington D.C.

6) Modifying the mix and configuration of agricultural species to mimic the structure and function of natural vegetation.

These strategies are supported by real-life experience. For example:

- Veterinary research to develop a livestock vaccine against rinderpest, a viral disease, has not only protected domestic cattle in East Africa, but also protected millions of wild buffalo, eland, kudu, wildebeest, giraffe and warthog that share rangelands and reserves, and that are also susceptible to the disease.[14] New park zoning and use regulations, as well as communications systems with local herders, are needed for successful co-management to take full advantage of such opportunities.
- Crop breeders in the U.S. are developing native perennial grains (such as bundleflower, leymus, eastern gamagrass, and Maximilian sunflower) that can be grown more sustainably with much less environmental damage in dryland farming regions.[15] The systems are not yet economically competitive, but yields have reached 70 per cent of annual wheat varieties, while production costs are lower; habitat value for wildlife is many times higher than in conventional wheat fields. Promoting these species will require changes in agricultural subsidy policies.
- In the humid tropics, research has demonstrated the benefits for both sustainability of production and biodiversity conservation of farming systems that 'mimic' the structure of the natural forest ecosystems. Millions of hectares of multi-strata 'agroforests' in Indonesia produce commercial rubber, fruits, spices and timber, often in a mosaic with rice fields and rice fallows. The number of wild plant and animal species in these agroforests are often nearly as high as in natural forests. Maintaining these systems involves policy reforms to strengthen

Millions of hectares of multi-strata 'agroforests' in Indonesia produce commercial rubber, fruits, spices and timber, often in a mosaic with rice fields and rice fallows. The number of wild plant and animal species in these agroforests are often nearly as high as in natural forests

14. Woodford, M. (2000). 'Rinderpest or cattle plague'. Briefing Note of 26 January for Future Harvest Foundation, Washington D.C.
15. Pimm, S.L. and P. Raven (2000). 'Extinction by numbers'. *Nature* 403:843-845

farmers' tenure claims, and 'level the playing field' with subsidised rice production. [16]

- In Central America, researchers are developing modified systems of shaded coffee with domesticated native shade tree species, that maintain coffee yields while also diversifying income sources and conserving wild biodiversity. Farmer adoption of these systems has been promoted through changes in public coffee policy to favour shade systems, technical assistance, and in some cases price premiums in international markets for certified 'biodiversity-friendly' coffee.[17]

To have a meaningful impact on biodiversity conservation at global or regional scales, ecoagriculture must be broadly promoted. In some cases, ecoagriculture systems can be developed by using available components and information from scientific and local knowledge, and by improving these through trial and error to design landscapes that address both local livelihood and conservation objectives. But in most cases major scientific initiatives will also be required, using sophisticated methods and tools from various disciplines. Indeed, ecoagriculture is feasible now in large part because of the greater capacity to find synergies through scientific management. Advances in conservation biology, agricultural ecology, plant breeding, ecosystem monitoring systems, and computer-based modelling are revolutionising the ability to understand and manipulate wildlife-habitat-agriculture interactions, to the benefit of both people and the rest of nature.

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5. POLICIES TO PROMOTE SUSTAINABLE LANDSCAPES

The previous discussion demonstrated the importance of developing new approaches to sustainable landscapes. Experience has shown that new policy and institutional approaches are also essential to making this transition.

16. Tomich, T. *et al.* (2001). 'Agricultural intensification, deforestation, and the environment: assessing tradeoffs in Sumatra, Indonesia', pp. 221-244. In Lee, D. and C. Barrett, *Tradeoffs or Synergies? Agricultural Intensification, Economic Development, and the Environment.* CAB International, New York.
17. Giovannucci, D. (2001). *Sustainable Coffee Survey of the North American Speciality Coffee Industry.* World Bank, Washington D.C.

Establishment of clear legal property rights is important for wild biodiversity conservation, to establish the legitimacy of conservation areas and actions. Of particular concern are recognising local farmers' rights in protected area designation and management, protection of indigenous rights in biodiversity-rich areas, integration of biodiversity considerations into water rights regimes, and rights over wild genetic resources. In addition, payments to farmers for carbon, water, salinity control or other environmental services could potentially be combined to generate payments high enough to justify farmer investment in ecoagriculture. The implications of markets for environmental services such as this are explored in detail in Chapter 4.

5.1 Recognising farmers' rights in protected area designation and management

Formal authority over at least some natural resource management has been devolved to local levels in many developing countries over the past decade, such as Bolivia, Zimbabwe, Indonesia, India, and the Philippines. This reform should make it easier for local people to play a role in designing and managing protected areas

The first generation of protected areas for biodiversity were largely established on public lands or under eminent domain by national government agencies. In many cases, these lands had been actively used, or claimed under customary rights, by local communities. Losses suffered by local people were particularly important in shifting cultivation systems where fallow lands were presumed to be 'unused', and for common lands important for extractive activities. Recognition of this issue has led to the incorporation of safeguards to protect local land and usufruct rights, many of which are now reflected in the various international environment conditions, including the CBD. Mechanisms for protection and compensation of any losses arising from protected area status designation are now also part of national legislation in many countries.

Formal authority over at least some natural resource management has been devolved to local levels in many developing countries over the past decade, such as Bolivia, Zimbabwe, Indonesia, India, and the Philippines. This reform should make it easier for local people to play a role in designing and managing protected areas. But even where the enabling policy framework exists, the devolution processes poses some immediate problems, given the

weaknesses of local authorities. In many countries, local administrators and elected officials have little training in biodiversity and natural resource management, and limited resources at their disposal, while some customary resource managers may be disempowered.[18] Efforts to strengthen local governance of natural resources can help to protect farmers' rights in natural resource policy.

5.2 Indigenous land rights for biodiversity conservation

A high proportion of remaining wild biodiversity is found in areas of traditional indigenous settlement where indigenous resource management systems are still functioning. For example, 30 per cent of the remaining natural forest in Mexico – and that with the greatest biodiversity – is on lands controlled by indigenous people.[19] However, in many developing countries, as a result of colonial rule, nationalisation of natural resources at independence, or the establishment of protected areas, indigenous claims to natural resources have been weakened or even denied. In the process, traditional rules regulating resource access have lost their legitimacy, invariably leading to over-exploitation of resources. Even where land tenure for agriculture is secure (through titling or usufruct rights to individuals or communities), indigenous people have often lost rights to manage natural resources.

30 per cent of the remaining natural forest in Mexico – and that with the greatest biodiversity – is on lands controlled by indigenous people

As early as 1975, the South Pacific Conference on National Parks and Reserves recommended that governments 'provide machinery to enable the indigenous people involved to bring their land under protection as national parks or reserves without relinquishing ownership of land, or those rights in it which would not be in conflict with the purposes for which the land was reserved'. Many recent initiatives have been successful in establishing indigenous people's rights to manage protected areas, to conserve both biodiversity and compatible agricultural systems. Some 80 per cent of Latin America's natural forest is now under

18. Place and Waruhiu (2000) *op.cit.*
19. Scherr, S.J., White, A., Kaimowitz, D. (2001). *Strategies to Improve Rural Livelihoods through Markets for Forest Products and Services.* Forest Trends and the Center for International Forestry Research, Washington, D.C.

indigenous control.[20] In Nicaragua, the Miskito people have formed their own NGO to manage the Miskito Coast Protected Area, overseen by a commission including government, regional, NGO and community representatives.[21] In the Philippines, a local NGO established by the Ikalahan Tribe is managing the 14,730 hectare Kalahan reserve in Luesan. They are implementing an integrated programme of community forest management and the extraction of non-timber forest products leading to production of jams and jellies from forest fruits, extraction of essential oils, collection and cultivation of flowers and mushrooms, and manufacture of furniture.

5.3 Water rights for biodiversity protection

Complex sets of ground, surface and irrigation system water rights in agricultural areas govern access by farmers for irrigation and for livestock, by industrialists for processing needs, and by settlements and cities to provide domestic water supplies. Only recently has water been legally reserved in some parts of the world to preserve wildlife habitat. State law in California, for example, prohibits water transfers that would have an unreasonable impact on fish, wildlife or other instream uses. The US Endangered Species Act prohibits water transfers that could harm or harass listed species or cause a significant loss of their habitat. In Mexico, the water law of 1992 requires that quality of water required in the discharge be specified in the granting of water rights, and the responsible national agency can restrict water use in the event of damage to ecosystems, overexploitation of aquifers and other environmental impacts. Increasingly, processes being developed for negotiating water rights among diverse stakeholders in a catchment or irrigation district include negotiators representing the interests of biodiversity conservation.[22]

Increasingly, processes being developed for negotiating water rights among diverse stakeholders in a catchment or irrigation district include negotiators representing the interests of biodiversity conservation

20. White, T.A., Martin, A., 2002. 'Who Owns the World's Forests?' Forest Trends and Center for International Environmental Law, Washington, D.C.
21. (Barzetti, V., (ed.), 1993. 'Parks and Progress: Protected Areas and Economic Development in Latin America and the Caribbean'. IUCN and Inter-American Development Bank, Washington D.C.
22. Meinzen-Dick, R. and G.Makombe, (1999) 'Dambo irrigation systems: indigenous water management for food security in Zimbabwe.' In Knox McCulloch, A., Babu, S. and P. Hazell (eds). *Strategies for Poverty Alleviation and Sustainable Resource Management in the Fragile Lands of Sub-Saharan Africa*. Proceedings of the International Conference held from 25-29 May, 1998. Entebbe, Uganda.

5.4 Property rights for genetic resources

The rising dominance of private companies rather than public sector research institutions in genetic improvement of agricultural species, and the promising commercial prospects for genetically modified organisms (GMOs) in agriculture and other sectors, have ushered in a period of intense debate and conflict about 'property rights' for genetic resources. Who 'owns' a gene? Who should benefit from the commercial application of that gene? Will patenting of genetic improvements restrict farmers and local people from using and distributing the native plants or indigenously-developed varieties that were the original source of the gene? Should farmers be compensated financially for past or current in situ conservation of genetic material from valuable domesticated or wild plants and their wild relatives? If so, how? The ultimate legal frameworks that are established internationally and nationally to govern these rights will have a profound effect on farmer, agribusiness, environmentalist and research incentives to maintain, control and access biodiversity.

Who 'owns' a gene? Who should benefit from the commercial application of that gene? Will patenting of genetic improvements restrict farmers and local people from using and distributing the native plants or indigenously-developed varieties that were the original source of the gene?

Today's bioprospector must meet the CBD's Article 15 requirements for prior informed consent, access on mutually agreed terms, and the fair and equitable sharing of benefits. They must also address issues of intellectual property rights and technology transfer; obtain appropriate permits to collect, enter land, and export and import materials; satisfy phytosanitary (for plants) and CITES requirements; and ultimately meet regulatory requirements for product safety standards. Thus bioprospecting depends for its success on the shared and realistic expectations of the partners and their ability to meet each other's needs. The Philippines has already introduced restrictive legislation governing access to genetic resources, while access and benefit-sharing measures have been concluded or are under development in Australia, Fiji, India, Indonesia, Malaysia, Thailand, and elsewhere.[23]

23. ten Kate, K. and S.Laird (1999). *The Commercial Use of Biodiversity: Access to Genetic Resources and Benefit-Sharing*. Earthscan, London

6. CONCLUSIONS

Converting the potential benefits of sustainable landscape into real and perceived goods and services for society at large (and especially for local people) requires a systems approach, as suggested above. Elements of this approach include:

- At the national level, an integrated set of protected areas encompassing various levels of management and administration, including the national, provincial, and local governments, non-governmental organisations, local communities and indigenous peoples, the private sector, and other stakeholders.[24]
- Within the framework of the market-based economic systems that are becoming increasingly widespread, greater participation by the civil society in economic development that extends to the management both of productive landscapes and protected areas, especially for tourism and the sustainable use of certain natural resources.[25]
- A fairly large geographical scale (sometimes called a 'bioregion') for resource management programmes, within which protected areas are considered as components in a diverse landscape, including farms, harvested forests, fishing grounds, human settlements, and infrastructures.[26]
- Co-operation between private landowners, indigenous peoples, other local communities, industry and resource users; the use of economic incentives, tax arrangements, land exchanges and other mechanisms to promote biodiversity conservation; and the development of administrative and technical capacities which encourage local stakeholders, universities, research institutions, and public agencies to harmonise their efforts.

Converting the potential benefits of sustainable landscape into real and perceived goods and services for society at large (and especially for local people) requires a systems approach

24. McNeely (1999). *op.cit.*
25. Szaro, R.C. and D.W. Johnston eds. (1996). *Biodiversity in Managed Landscapes*, Oxford University Press, Oxford
26. Miller (1996). *op.cit.*

A programme for sustainable landscape management that includes biodiversity conservation needs to include both firm governmental action and alliances with the other stakeholders. National governments cannot delegate their role of guarantors of the conservation of a country's natural heritage, so the appropriate authorities need to build the capacity to fulfil their regulatory and management duties and responsibilities. But civil society can share certain rights and responsibilities regarding the management of living natural resources after careful preparations and an adequate definition of roles and responsibilities. Given the interests of NGOs, business, indigenous peoples, and local communities who live within or close to protected areas, alliances should be created among stakeholders that enable each to play an appropriate role according to clear government policies and laws.

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Managing for sustainable landscapes requires the development and actual implementation of sustainable production systems adapted to the different kinds of ecosystems. These should include, among others, the scientific, technological, economic, social, financial, and educational components which are required to ensure sustainability. The exact mix of goods and services to be provided from any particular landscape should be based on dialogue among industry, government, academics, hunters, local municipalities, and the environmental community, thereby bringing a measure of democracy to the landscape and enhancing the likelihood of sustainability.

7

Mainstreaming Biodiversity into Business

Annelisa Grigg[1], Fauna and Flora International

Responsibility for the preservation of biodiversity extends far beyond Governments. Every individual, local community, sector and organisation, whether private, public, national, international or non-governmental, has an obligation and an interest in changing outlooks through education, and by example, thereby helping to end thoughtless or deliberate waste and destruction.[2]

1. INTRODUCTION

Biodiversity conservation has frequently been viewed in isolation from the need to create sustainable livelihoods. As the links between social and economic development, human health and environmental integrity become more apparent, conservation is becoming an increasingly complex affair, requiring input and action by a diverse range of stakeholders, including the private sector.

Biodiversity is defined as the variability within and between species and of ecosystems. Private sector interest in biodiversity goes beyond the identification of the useful elements of

1. The author would like to thank Kerry ten Kate of Insight Investment and Mark Rose, Ros Aveling, Martin Hollands and Zbigniew Karpowicz of FFI.
2. Kofi Annan, United Nations Secretary-General (2004). 'Message for the International Day for Biologial Diversity', 22 May 2004.

biodiversity for consumption (although this, of course, forms a substantial part of private sector interactions with biodiversity) to a recognition that the complex interactions between and amongst species play an important role in creating a stable operating environment. Negatively impacting on biodiversity can therefore have significant implications in terms of reputation, licence to operate and continued access to resources. Beyond this simply utilitarian view, some companies are acknowledging the moral case for managing their social and environmental impacts.

Earlier chapters in this publication have outlined a move toward the integrated treatment of livelihood and biodiversity issues as a means of better addressing the complex links between social and environmental needs and increasing progress towards achieving the United Nations Millennium Development Goals (MDGs). In much the same way, the perceived role of business is changing. It is increasingly recognised that there are both business risks and opportunities associated with mismanagement of biodiversity and, as a result, leading businesses are moving to understand and reduce their impacts. What this means is a shift from companies perceiving biodiversity as a community or philanthropy issue to them seeing it as a core business issue relevant to both risk and opportunity and thus worthy of significant attention and investment.

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This chapter outlines the trend toward the increasingly clear role for the private sector in minimising its impact on biodiversity and facilitating the development of pro-biodiversity business. It outlines some of the causes of this trend and looks at the drivers for the private sector – ranging from multinational corporations to small and medium sized enterprises – to conserve biodiversity. As part of this, the close association between livelihoods, corporate responsibility and biodiversity is considered and barriers to private sector engagement are outlined. Finally, a series of future actions are suggested.

Underlying this chapter is the assumption that the private sector is only one of a set of key stakeholders that must be

engaged in order to reverse the current decline in biodiversity. It is recognised that much of the private sector is operating in a way that fundamentally, negatively impacts on biodiversity but highlights a number of initiatives amongst large and small companies that are beginning to address the issue of biodiversity loss.

The causes of biodiversity loss such as conflicts between resource consumption demands and the encouragement of unsustainable resource exploitation as a result of the globalisation of trade and the increasing separation of the producer from consumer are not examined in this chapter in depth as they have been covered in a number of other publications.

2. THE CHANGING FACE OF BUSINESS – THE RISE OF CORPORATE RESPONSIBILITY

A number of company and sectoral corporate responsibility initiatives have developed, recognising that responsible business practice has the potential to deliver business benefits as well as protect against risk

The increasing size and global influence of business, globalization of trade and greatly enhanced speed of communication have combined to change the relationship between business and society.[3] The developing global impact of business has been matched by increased access to information and a more co-ordinated and informed response by civil society organisations concerned with the level of power and impact such multinational organisations have.

In response to this, a number of company and sectoral corporate responsibility initiatives have developed, recognising that responsible business practice has the potential to deliver business benefits as well as protect against risk. More companies see value in incorporating social and environmental issues as part of their decision making processes as a means of ensuring future access to capital, maintaining licence to operate, attracting and retaining good quality staff and responding to customer needs.

The growth of the socially responsible investment (SRI) industry has been a further factor in encouraging

3. UNIDO (2002). *Corporate Social Responsibility: Implications for Small and Medium Enterprises in Developing Countries*. United Nations Industrial Development Organisation, Vienna

responsible business practices. Whilst still relatively small compared to mainstream investment practices, SRI is rapidly growing and is having a greater and greater impact on company activities. The past five years has seen significant growth in the number of SRI funds. Whilst they still make up only a small percentage of capital markets, the amount of influence they have on corporate behaviour far outstrips their shareholdings. In France, for example, the SRI market has increased 35 per cent over the last year from 2.5 billion Euros in 2003 to 4.4 billion Euros in 2004.[4]

The development of investment indices which benchmark company performance such as the Dow Jones Sustainability (SAM) Index and FTSE4Good have created a visible measure of company activities which, because they publicly benchmark one company's performance against another, are driving board level attention on the social and environmental issues that they describe. The development of industry or cross sectoral standards such as the Global Compact and the Sullivan Principles have set further benchmarks for corporate performance against which civil society can hold them accountable.

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3. THE LINK BETWEEN NATURAL AND CORPORATE VALUE

The world's biodiversity is currently disappearing at a rate thousands of times greater than any time in the past.[5] Business clearly impacts on biodiversity – through sourcing of raw materials for production and consumption, management of company landholdings and through release of environmental pollution such as green house gas emissions. Food processors, forestry and paper, mining, oil and gas, utilities, electricity, pharmaceuticals and biotechnology and tobacco companies are the business sectors with the greatest impacts on biodiversity.[6] However, all businesses have some form of impact on biodiversity,

4. Novethic Indicator (2004). http://www.novethic.fr/novethic/images/upload/Indicateur_Q4_2003.pdf
5. Stuart, S. (1999). *Species: Unprecedented Extinction Rate and It's Increasing.* IUCN Species Survival Programme
6. ISIS Asset Management plc (2004). *Are Extractive Companies Compatible With Biodiversity? Extractive Industries and Biodiversity: A Survey.* See http://www.isisam.com

whether directly through their operations or indirectly along the supply chain through pollution or resource use. These impacts can be considered to occur at three levels:

- Primary: impacts of the company within or near its sites;
- Secondary: impacts along the supply chain through product use, migration of people and activities associated with the development;
- Tertiary: indirect impacts through, for example the company's contribution to the areas economic/ social development; impacts on climate change as a result of emissions (see Chapter 3 for a discussion of the links between biodiversity and climate change); introduction of 'alien' species and monocultures.

Alongside these impacts are the changing characteristics of business. Production and consumption are becoming increasingly geographically separated with demand from Western consumer society encouraging the development of large regional industries aimed at producing a single product. This has significant implications for biodiversity as large tracts of native habitat are cleared to make way for non-native monocultures.

The lack of a clearly understood link between corporate and natural value has meant that business has been slow to understand that there are both threats and opportunities posed by mismanagement of biodiversity and have often seen the issue of biodiversity management as a governmental or societal responsibility

The lack of a clearly understood link between corporate and natural value has meant that business has been slow to understand that there are both threats and opportunities posed by mismanagement of biodiversity and have often seen the issue of biodiversity management as a governmental or societal responsibility. Given the complex nature of the impacts outlined above, the debate is set to continue as to where the lines of responsibility are drawn between business and government.

Many view big business as inherently unsustainable. This is based on the premise that business is governed by the need to generate shareholder value and thus requires unsustainable levels of consumption to generate this value. At first glance, this makes conservation of biodiversity and business incompatible. A responding view from the private

sector is that currently companies are valued on financial terms only and a broader understanding of corporate value is required that brings in the costs of social and environmental damage as a component of corporate value.

With the growth of socially responsible investment, companies are being encouraged to gain a greater understanding of the social and environmental risks and opportunities faced by their business as a key influencer of shareholder value. Much of the focus in recent years has been on climate change as the big environmental risk, with a plethora of initiatives evolving aimed at mitigating and adapting to climate change. Whilst these have a significant impact on biodiversity, as discussed in Chapter 3, they have focused business attention away from other environmental issues. There is, however, growing interest within the investment community in the links between biodiversity conservation and corporate value. UK companies Insight Investment (Box 7.1) and ISIS Asset Management plc have highlighted biodiversity risks within the extractives industry[7] whilst ISIS has also flagged biodiversity issues relating to oil palm – a component of the supply chain for many retailers and general household products companies.[8]

With the growth of socially responsible investment, companies are being encouraged to gain a greater understanding of the social and environmental risks and opportunities faced by their business as a key influencer of shareholder value

The business case for managing biodiversity centres around four key factors, although these are not exhaustive:[9]

- **Continued access to resources**: Over 70 per cent of the reserves and production from 120 oil and gas projects under development are developing countries – home to most of the world's biodiversity – compared with 21 per cent in 1970.[10] Similarly, the World Resources Institute found that approximately three-quarters of active mines and exploratory sites overlapped with areas of high conservation value.[11] In the light of international

7. ISIS Asset Management plc (2004). *Is Biodiversity a Material Risk for Companies? An Assessment of Exposure of FTSE Sectors to Biodiversity Risk*. See http://www.isisam.com
8. ISIS Asset Management plc (2003). *New Risks in Old Supply Chains: Where does your oil palm come from?* Report prepared by Proforest and ISIS Asset Management. See http://www.isisam.com
9. Insight Investment (2004). *Protecting Shareholder and Natural Value. Biodiversity Risk Management: Towards Best Practice for Extractive and Utility Companies* Insight Investment Management Ltd, London, UK
10. Goldman Sachs (2004). Global Energy: *Introducing the Goldman Sachs Energy Environmental and Social Index. Energy Environmental and Social Report*
11. WRI (2003). *Mining and Critical Ecosystems, Mapping the Risks*. World Resources Institute, Washington DC.

commitments to reduce biodiversity loss, this overlap has major implications for extractive industries.

- **Access to capital**: As investors become more aware of the link between social, environmental and economic performance, biodiversity-impacting investments are coming under greater scrutiny. The International Finance Corporation, for example, is revising its safeguard policies which set out the environmental and social conditions which the IFC requires prior to loan approval.[12] These policies include specific reference to biodiversity which is due to be supplemented shortly by a Good Practice Guide for biodiversity management within the private sector. Both the safeguard policies and good practice guide will form part of the requirements placed on signatories of the Equator Principles. Investors such as Insight Investment (Box 7.1) and Isis Asset Management plc are evaluating their investments to understand the level of risk to which they are exposed. This evaluation is considered along side other social, environmental and economic issues and used inform investment decisions.

- **License to operate**: Good relations with stakeholders such as local communities, governments and NGOs can speed the time required to gain permits and confer the status of favoured partner on companies that have strong environmental management practices. The recent Extractives Industries Review recommended that the World Bank take a stronger stance on the operation of extractive companies within sensitive environments.[13] Whilst the Bank has declined to do this, it is indicative of a tightening financing and regulatory regime which may require demonstration of robust approaches to managing corporate impact on biodiversity.

- **Avoidance of costs and liabilities**: Avoidance of financial and reputational cost as a result of infringement of sensitive sites, continued access to stable operating

Good relations with stakeholders such as local communities, governments and NGOs can speed the time required to gain permits and confer the status of favoured partner on companies that have strong environmental management practices

12. World Bank (2004). *Striking a Better Balance – the World Bank Group and Extractive Industries: Final Report of the Extractive Industries Review.* Draft World Bank Group Management Response. World Bank, Washington DC
13. World Bank (2004). *op.cit.*

environments and the ability to benefit from essential services such as flood control through ecological activities.[14]

Despite this linking of corporate and natural value, the true costs of environmental services remain externalised. Until such time as the costs of a robust, healthily functioning ecosystem are factored into the delivery of goods and services, they will continue to be exploited unsustainably. Voluntary (and some mandatory) initiatives are beginning to drive the internalisation of such costs. For example, the EU Emissions Trading Scheme is driving the inclusion of the cost of carbon emissions into some industries. However, most countries remain reluctant to legislate to internalise costs – the reluctance of Russia and the US to ratify Kyoto is a case in point. As a result it remains easy for companies to adopt a short-term view that fails to properly value biodiversity.

Until such time as the costs of a robust, healthily functioning ecosystem are factored into the delivery of goods and services, they will continue to be exploited unsustainably. Voluntary (and some mandatory) initiatives are beginning to drive the internalisation of such costs

4. BIG BUSINESS AND BIODIVERSITY

The response of companies to the issue of biodiversity conservation varies considerably. Some companies fail to acknowledge the link between biodiversity and corporate value, others focus on mitigation of impact or minimising risks whilst yet others see the management of biodiversity as a means of realising benefit as well as managing risk. For some companies there is also a moral justification in addressing these issues. To increase the contribution big business can make to biodiversity conservation, the link between business value and biodiversity needs to be strengthened. Whilst some socially responsible investment companies also address biodiversity issues (Box 7.1), the majority of investors do not. It is therefore critical that the various sustainability investment indices adequately address biodiversity as an issue.

Linking biodiversity to corporate strategy

Some companies have developed challenging visions and policies on biodiversity. BP's Group Chief Executive, for

14. Advisory Committee on Business and the Environment V (2002). *Scoping Paper: Engaging Business in Biodiversity,* ACBE UK

example, has committed BP to having "a real, measurable and positive impact on the biodiversity of the world."[15] In a similar vein, other companies have committed to having a

Box 7.1: Protecting shareholder and natural value – the investor view

Insight Investment, the asset manager of the Halifax Bank of Scotland (HBOS plc) has highlighted biodiversity as 'one of the issues that can contribute to the risks and opportunities faced by a given company'. They link this risk to licence to operate, liabilities, damage to reputation and increased operational costs. However, they are also careful to outline the positive side of managing biodiversity in terms of speed in gaining planning permission and stronger relations with key stakeholders.

In 2004 Insight released a benchmarking study that explored the extent to which 22 companies within the mining, oil and gas, and utilities sectors understood and managed their biodiversity impacts. Drawn from the key elements of a management system, four aspects of biodiversity management were considered: governance; policy and strategy; management and implementation; and, monitoring, assurance and reporting. Levels of activity were found to vary considerably within each sector and the report noted that it was extremely difficult to tell from public disclosures alone the extent to which the companies understood their impacts on biodiversity and had systems in place to avoid, minimise, mitigate or offset their impacts on it. Leading companies showed similar characteristics including:

- Ability to demonstrate an understanding of the links between their impact on biodiversity and business risk;
- Communication of an unambiguous statement that described their vision for biodiversity which could be used to drive progress;
- Elaboration of management tools and processes that addressed key biodiversity risks and meant the companies could deliver upon their policy commitments;
- Development of partnerships with environmental NGOs as a means of gaining greater understanding of the issue, accessing local information and expertise and gaining credibility with stakeholders.

The range of activities within sectors was significant with a number of companies failing to make the link between biodiversity risks and potential business issues. In their report, Insight recommended that companies – purely from a risk and opportunity management perspective – are able to demonstrate the following:

- **Identify and understand their impacts on biodiversity** and assess **business risks and opportunities** associated with these impacts
- Introduce company–wide **policy and/or strategy commitments** to understand and mange biodiversity related risks and opportunities and to avoid, minimize and mitigate impact where possible including publicly stated goals and targets for implementation
- Employ a range of **tools to deliver** on these policy and strategy commitments including site selection tools, environmental and social impact assessments and biodiversity action plans
- **Monitor and report on progress** to key stakeholders

Insight is continuing to work with their investee companies to encourage them to adopt these activities. The challenge will be to ensure that the methodology used here for benchmarking performance evolves in lines with developments in thinking in the area, is taken up by the wider investment community and evaluates the way in which the companies link into and support international and national priorities around biodiversity conservation.

Source: Insight Investment (2004) *Protecting shareholder and natural value. Biodiversity risk management: towards best practice for extractive and utility companies.*

15. **Insight Investment (2004). *op.cit.***

Corporate social responsibility must be underpinned by a strong business case that links social and environmental responsibility with financial success. In the case of biodiversity, the business case is often hard to establish and in a number of sectors other interventions at a governmental level will be necessary

"net positive effect on biodiversity by minimizing the negative impacts of its activities and by making appropriate contributions to conservation in the regions in which it operates". The challenge now will be to develop action plans and strategies that make good these commitments. Critics are sceptical of corporate commitments such as these, but just the processes that companies have to go through to devise and attempt to deliver such claims means that they are gaining understanding of the complexity and importance of conserving biodiversity.

Corporate biodiversity activities range from philanthropy (such as the donation of funds to conservation initiatives which are unlinked to the companies' core business), to direct conservation interventions (for example, management of biodiversity impacts on the their own land or involvement in conservation initiatives with NGO partners in the areas impacted by operations such as water courses or protected areas), to working with local stakeholders to build capacity to develop local, regional and national biodiversity strategies and action plans. Whilst philanthropy can have some reputational benefit, it is unlikely to be sustainable in the long term and may suffer in times of economic downturn.[16] Corporate social responsibility must be underpinned by a strong business case that links social and environmental responsibility with financial success.[17] In the case of biodiversity, the business case is often hard to establish and in a number of sectors other interventions at a governmental level will be necessary.

Working at a sectoral level

Sectoral initiatives have a strong role to play in setting benchmarks and providing guidance and advice for companies which lack the in-house resources to understand and respond to pressures from investors and other stakeholders. Two key initiatives are the Energy and Biodiversity Initiative (the EBI) and the International Council

16. WBCSD (2004) *Finding Capital for Sustainable Livelihoods Businesses*. World Business Council for Sustainable Development, Geneva
17. UNIDO (2002). *op.cit*

on Mining and Metals (ICMM). The EBI is an initiative between a number of leading conservation organisations and oil and gas companies which has produced a range of tools and methodologies for managing biodiversity impacts.[18] The ICMM addresses broad sustainable development concerns for the mining industry and also provides specific guidance on biodiversity management and evaluating the extent to which the industry can contribute to biodiversity conservation. As part of this work ICMM member companies have made a commitment not to operate within World Heritage Sites.[19]

The role of the NGO community

NGOs have an important role to play in challenging industry to go beyond mitigation of impact, to offsetting and investing in biodiversity conservation and ultimately striving towards a goal of no net biodiversity loss. Given the scepticism that exists concerning the motivation of corporations, it is important that NGOs with whom they work are independent, objective and able to challenge company activities in such a way that ensures real conservation benefits. The ability to measure and demonstrate conservation outcomes is of fundamental importance and NGOs have been asked to help with establishing conservation priorities and developing performance indicators. Indeed, it could be said that industry has thrown down the gauntlet to the NGO community, asking them to co-ordinate better to help business manage biodiversity more effectively.[20] It remains to be seen whether NGOs will be willing, and able, to respond to this challenge.

Given the scepticism that exists concerning the motivation of corporations, it is important that NGOs with whom they work are independent, objective and able to challenge company activities in such a way that ensures real conservation benefits

5. THE CASE FOR PRO-BIODIVERSITY SMES

Much of the focus of NGOs and investors to date has been on the biodiversity impacts and management practices of big business. However, small- and medium- sized enterprises

18. Energy and Biodiversity Initiative (2003) *Integrating Biodiversity Conservation into Oil and Gas Development* http://www.theebi.org
19. See http://www.icmm.com
20. Kerry ten Kate, Insight Investors, pers. comm.

(SMEs) are major contributors to both income generation and resource use in much of the world and thus have the potential to significantly impact on, and influence, biodiversity. Indeed, many consider that the path to biodiversity-aware development lies with removing the barriers faced by SMEs rather than focusing on big business. The focus of corporate responsibility itself has been on larger businesses and the associated tools and methodologies are often inaccessible – or indeed inappropriate – to smaller businesses as a result, particularly those that operate in a developing country context and which are beset by a range of social and economic imperatives which frequently overshadow environmental considerations.[21] However, SMEs are seen as essential to the 'path out of poverty' for many developing countries.[22] An important component of a larger company's CSR commitment is support for SME development.[23]

SMEs can fall into a financing gap, being too small and risky for many private sector investors (with attendant high transaction and management costs), and not demonstrating sufficient biodiversity benefits to access bilateral/ multilateral finance

Creating an economically viable SME

The challenge for SMEs is first and foremost ensuring that they are financially sustainable and this needs to underpin any initiative aimed at promoting pro-biodiversity business. From an investor perspective, levels of business risk are high, particularly for SMEs in developing countries. Similarly, levels of return are often lower than many investors are prepared to accept and may only be generated in the longer term. As a result, SMEs can fall into a financing gap, being too small and risky for many private sector investors (with attendant high transaction and management costs), and not demonstrating sufficient biodiversity benefits to access bilateral/ multilateral finance (such as GEF).[24]

Currently SME engagement with biodiversity issues is limited to a fairly select range of sectors and services that have managed to demonstrate a financial case for biodiversity. Barriers to wider adoption are varied and

21. UNIDO (2002) *op.cit.*
22. WBCSD (2004). *op.cit*
23. UNIDO (2002) *op.cit.*
24. Mark Eckstein, IFC, pers.comm.. IFC (forthcoming) *Best Practice Guidance on Biodiversity for the Private Sector.* International Finance Corporation, Washington DC

include lack of exposure of SMEs to 'normal' pressure sources or drivers of change. SMEs often sit at the bottom of complex, untraceable supply chains, they access finance from sources that frequently lack environmental and social safeguards and, whilst cumulatively they can have a significant impact on biodiversity, in isolation their impact is small. When this is teamed with lack of ownership of the resources they exploit and lack of knowledge on the legal context of biodiversity the incentive to address biodiversity issues is low.[25]

Research conducted in 2002 for the UK Government's Department of Trade and Industry amongst UK SMEs, found that fear of bureaucracy, time and cost are the main barriers to further engagement on corporate responsibility issues. A lack of knowledge of the issues was also an area of concern. Whilst this described a developed world scenario, it nonetheless highlights problems that will be compounded for SMEs operating in developing countries. The main driver of SME development in the South tends to be a requirement for quick returns to satisfy immediate livelihood needs – often resulting in a short term (and potentially unsustainable) approach to resource exploitation.

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There are significant barriers to overcome to enable SMEs to move to a pro-biodiversity, or indeed, responsible business model. However, there are also substantial benefits to SMEs in engaging on the issue. Smaller companies can possess greater understanding of the dynamics of the ecosystem in which they operate and as a result can more easily achieve a win-win for income generation and biodiversity conservation. They are often located where they can readily see the impacts of their operation on biodiversity and livelihoods and hence the case to address those impacts is easier to make.

A range of organisations have attempted to capitalise on this advantage and provide finance to pro-biodiversity businesses that are otherwise unable to gain funding for

25. IFC (forthcoming) *op.cit.*

expansion or continuation. Examples include Verde Ventures, a joint initiative of IFC, the Global Environment Facility (GEF) and Conservation International,[26] and the EcoEnterprises Fund, an initiative of The Nature Conservancy and the Inter-American Development Bank.[27] Both are based on the tools and principles of venture combined with business advisory support. Since 2000 the

Box 7.2: Creating pro-biodiversity business in the new EU Member States of Central Europe

Many SMEs working in renewable natural resource deal with biodiversity but there appears to be little support, research and few practical tools to help them to partake in new opportunities, both commercially and for conservation. FFI and the DOEN Foundation (with the participation of EBCD and EBRD) joined forces in 2004 to carry out a pilot project to invest in SMEs already working with biodiversity and to develop processes and tools which will help them to expand and innovate.

Three countries in the new member states of central Europe were selected for the pilot on the basis of their diversity of biomes (and therefore economic activity related to the natural resources) and on the basis of their advanced transition to a market economy. Focus was placed on selected regions in predominant and/or high value nature areas in each of the countries (e.g. steppe grasslands in Hungary; forests in Lithuania; coastal and marine, and wetlands in Poland). SMEs were identified in the selected regions for possible direct investment: to strengthen or to diversify their existing operations. Then through a series of interviews and meetings each was assessed against a specifically designed methodology – *the Company Assessment Tool Kit* allowing evaluation of both business and biodiversity benefits which would flow from the investment. Even at the early stage of the company identification and loan feasibility evaluation, many questions (and some answers) have arisen. For example, how can the public good aspect of biodiversity be reconciled with commercial investment? In principle, this is no different to the regulation and financing of the protection of other public goods such as air and water, but systems are not in place for biodiversity. On the commercial side, banks may set loan conditions which do not take account of the long-term nature of some biodiversity business development while unsecured loans and high rates of capital expenditure are often unavailable to SMEs (at least in one of the countries).

The FFI/DOEN pilot has begun a process of learning and knowledge accumulation with the aim of producing a viable investment mechanism and, in the longer term, catalysing policy changes that will create an environment which favours SME pro-biodiversity business. The project itself will provide some of the tools (e.g. company assessment, standard loan and standard costings guidelines and key indicator monitoring systems) but these will need to be further refined (with for example, eligibility criteria for investment packages) and the public/private aspect of investment will need more research. Nevertheless, the work done by the pilot will directly assist in the further technical design of EBRD's proposed Biodiversity Financing Facility. In the meantime, the pilot is not just a paper exercise. By the end of the project, a number of SMEs working with high-value resources will have received loans which will help in the sustainable management of the biodiversity as well as improving the commercial sustainability of the enterprise.

Source: Fauna and Flora International (http://www.fauna-flora.org) in co-operation with the DOEN Foundation (http://www.doen.org)

26. See http://www.conservation.org/xp/verdeventures/
27. See http://www.ecoenterprisesfund.com/

European Bank for Reconstruction and Development (EBRD) has also been in the process of examining the feasibility of establishing a Biodiversity Financing Facility. In 2004 Fauna and Flora International began a pilot project to create a viable pro-biodiversity investment mechanism which initially is being piloted for small and micro enterprises in Hungary, Lithuania, and Poland (Box 7.2).

A number of such initiatives have failed in the past and a key step in facilitating the successful development of these initiatives will be to learn from past failures and tailor any new approaches accordingly.

If the barriers to SME development – financial, trade and resource – are overcome they have the potential to play a huge role in minimising business impacts on biodiversity. The International Institute for Environment and Development is undertaking a range of activities aimed at overcoming some of these barriers and allow SMEs to more effectively contribute to reducing poverty and improvement security of forest goods and services (see Case Study).

If the barriers to SME development – financial, trade and resource – are overcome they have the potential to play a huge role in minimising business impacts on biodiversity

6. BUSINESS, BIODIVERSITY AND THE INTERNATIONAL AGENDA

Business at all levels is faced with problems in engaging with intergovernmental processes on biodiversity. This is largely because the business voice is excluded from the debate. Whilst there are reasons for this – concerns over the level of influence that business can exert in the case of big business and lack of opportunity, resources or expertise to contribute in smaller business – there is a clear argument for the involvement of business in such processes as a key stakeholder with a huge impact on biodiversity and also with the potential resources to address that impact.

The Convention on Biological Diversity (CBD), for example, in its formal processes has no involvement from business at all. Business is instead confined to participating in initiatives such as the Global Biodiversity Forum (GBF) which unfortunately feeds very late into the CBD process. At a

session in The Hague in 2002, the GBF highlighted the important role business should play in the delivery of the objectives of the CBD and recommended a series of actions to ensure a business voice is represented in the process.[28] Unfortunately these recommendations have not been taken up and as a result the array of learning about the management of biodiversity held within the business sector remains untapped and business is becoming increasingly frustrated as they are unable to feed in the practical knowledge of how business can contribute to biodiversity conservation. The SME community is similarly under represented in such discussions.

The Millennium Development Goals also have surprisingly little direct reference to business given that more than half the flow of funding from developed to developing countries is from private sources. Given the far-ranging impact of the private sector in terms of development, social equity and environmental impacts, business is surely a key sector to catalyse into action. Links to biodiversity conservation can be made within Goal 7: Ensuring environmental sustainability through target 9 'integrate the principles of sustainable development into country policies and programme and reverse the loss of environmental resources'. However the associated indicators 'ratio of protected area to maintain biodiversity to surface area' and 'proportion of forests' mean very little in terms of the impact and performance of industry with regards to biodiversity management.

The array of learning about the management of biodiversity held within the business sector remains untapped and business is becoming increasingly frustrated as they are unable to feed in the practical knowledge of how business can contribute to biodiversity conservation

Similarly, whilst Goal 8 refers to the need to develop an 'open, rule based, predictable, non-discriminatory trading and financial system' which includes a commitment to 'governance, development and poverty reduction' it fails to acknowledge the need to adjust current financing methods to factor in environmental and social risks and opportunities and therefore appropriately value investments. This misses a fundamental lever for change in corporate behaviour.

28. Global Biodiversity Forum (2002). ***Statement of the 16th Session of the Global Biodiversity Forum, to the 6th meeting of the Conference of the Parties to the Convention on Biological Diversity,*** **The Hague, The Netherlands**

Overall such initiatives and processes remain obscure to business and, as a significant global force for development and potentially for conservation, excluding business is a major omission. There is an urgent need, therefore, for the governors of these processes to consider how business – large and small – can be drawn into these discussions and appropriate safeguards set up to ensure that their level of influence is appropriate.

7. THE WAY FORWARD

A range of stakeholders have important roles to play to to increase understanding of the business case for biodiversity and to encourage the uptake of pro-biodiversity business. These include:

- Investors: Consistency is needed in the methods used to evaluate the risks and opportunities associated with biodiversity and their impact on company shareholder value across the investment industry. Logically this would sit within the remit of the UNEP Finance Initiative. Within the development and investment bank community, the cascade of biodiversity safeguards within mainstream safeguard policies, such as those produced by IFC, is important in particular in relation to the use of financial intermediaries who have a significant influence over investment flow in developing countries. The recently developed Equator Principles which aim to promote consistency of project investment social and environmental standards, have been signed up to by 27 banks. However, these focus on project finance in excess of $50 million which limit them in scope and reach.
- Companies: Leading companies need to consider their role in contributing to conservation going beyond simply restoration or rehabilitation to setting sectoral level vision, targets and initiatives which can be delivered on a regional or national basis in conjunction with other industry players and stakeholders. This should recognise the responsibility industry leaders have in raising the level of awareness and management of biodiversity impacts

Consistency is needed in the methods used to evaluate the risks and opportunities associated with biodiversity and their impact on company shareholder value across the investment industr

throughout the sector – from large companies to SMEs. They should continue to encourage the NGO community to collaborate with each other and business to drive this process forward and to call for a voice within the CBD. In doing this they must realise the need that NGOs will have to build their capacity to consider business and biodiversity issues. It may be that there is a role here for an international business and biodiversity grouping which draws upon the skills and experience of international and national NGOs already actively engaging with business and which sets out clear processes for governance of such collaborations to ensure that NGO integrity, objectivity and financial independence is maintained.

- SMEs: Additional effort is required to remove the barriers to financing and development of pro-biodiversity SMEs. This could be linked to larger companies' wider corporate responsibility programmes through corporate supply chains and the development of accessible finance initiatives through financial institutions. This requires companies to consider the need to create a business environment that understands the non-financial value of biodiversity.

A useful initiative would be to agree a set of principles for determining conservation priorities that can be used as a basis for dialogue between business, NGOs and government in informing development activities, or equally assisting in a decision not to develop

- NGOs: Relationships based on trust need to be fostered between NGOs big business. Associated with this, NGOs will need to build their capacity to engage with business and understand the various pressures and demands that business operates under, including those associated with corporate responsibility. A useful initiative here would be to agree a set of principles for determining conservation priorities that can be used as a basis for dialogue between business, NGOs and government in informing development activities, or equally assisting in a decision not to develop.

- Intergovernmental processes: Processes such as the CBD and Millennium Development Goals need to acknowledge the significant importance of business in driving biodiversity loss and thus the ability for business to engage to reduce this loss. Mechanisms need to be set up

within all relevant intergovernmental processes to ensure that business and biodiversity is on the agenda.

- Governments: Governments are important in providing the necessary framework and incentives for ensuring environmental costs are included in the full cost of doing business – for example through the creation of tailored financial instruments.
- Cross-sectoral initiatives: Multi-stakeholder initiatives are required in which NGOs, business and governments work together to define appropriate measures of company management of biodiversity which can be used by all parties to measure real conservation benefits. Alongside this, formal integration of business as a stakeholder within the development of national biodiversity strategies and action plans is required. Finally, business and NGOs need to work together with governments and stakeholders to determine regional conservation priorities.

Case Study 4

Small-medium Forestry Enterprises for Poverty Reduction and Sustainability[1]

Partners of the International Institute for Environment and Development (IIED) have been working in Brazil, China, Guyana, India, South Africa and Uganda to identify approaches by which Small and Medium-sized Forest Enterprises (SMFE) can better contribute to sustainable livelihoods. Six diagnostics reports identify policy and institutional gaps caused by the predominant international focus either on large-scale or micro-scale community forestry. An ongoing programme of work is seeking to redress this imbalance.

SMFEs make up a significant proportion of the forest sector in any country – usually in the range of 80-90 per cent (e.g. 92 per cent of the production volume of forest industries in the Brazilian Amazon) – except in high-tech capital intensive operations such as pulp and paper manufacture. They also employ significant proportions of the labour force (often exceeding 50 per cent) and thus contribute substantial amounts of income through formal channels. But, particularly at the small end of their size spectrum, SMEs also contribute a substantial amount into the informal economy – an estimated 41 per cent of gross national income in developing countries with evidence to suggest that the forestry sector is no exception.

There are three distinct reasons why a specific focus on SMFEs might be important for biodiversity:

(i) pragmatism – their sheer numbers and proportion of production;

(ii) pessimism – whether or not they offer the best solution to biodiversity concerns, they are currently failed by markets and institutions and this deserves specific redress;

1. Case study provided by Duncan MacQueen, Senior Research Associate, IIED Forestry and Land Use Programme

(iii) optimism – SMFEs, by dint of their small scale, have the potential to form part of an alternative, more humane and environmentally sustainable future.[2]

The potential contribution of SMFEs to biodiversity conservation lies in four areas: (i) patterns of ownership, related profit motives and local accountability (ii) patterns of tenure resulting in a geographical 'patchwork' at the landscape level (iii) patterns of investment setting limits on the technological ascendancy over nature and (iv) patterns of supply and demand that often cater to diverse and culturally distinct product and service types.

The geographical dispersal of SMFEs, however, and their administrative informality create considerable transaction costs for those seeking to engage with SMFEs – not least those seeking to promote biodiversity conservation. Options to reduce these costs have varied from measures progressively to eliminate SMFEs (e.g. in Mozambique) to those fostering SMFE associations (e.g. in Guyana). Co-ordination into such associations is an important step in improving information flows, introducing scale-efficient and biodiversity-friendly production techniques and redressing power imbalances.

The multiple forces of globalisation have led to examples of both massive failure among some categories of SMFE and (less often) rapid growth among others. The evolution of value chains often maintains SMFEs in lower production and processing tiers where low entry requirements, fierce competition and pressure from powerful buyers combine to keep both standards and profits low. The transition from low to high competition markets has often put additional pressure on the institutional structures governing resource access and use, to the detriment of SMFEs' impact on biodiversity.

Global pressures for biodiversity-friendly and equitable trade have resulted in many new standards, which themselves have faced difficulties in overcoming the transaction costs associated with small scale. Corporate responsibility among SMFEs is in its infancy and greater freedom from economic survivalist imperatives will be required for it to become widespread. Underlying the fragile state of many SMFEs is an implicit or explicit prejudice against small-scale operation on account of their poor social and environmental record and frequent invisible contribution in relation to the formal economy. While there is solid evidence behind the scepticism about SMFEs, ongoing work suggests that there is often a correlation between the responsibility of SMFEs and the trust placed in them as demonstrated by the creation of an enabling environment. This will be the key to their future success or failure.

2. This latter approach is argued for in Macqueen D.J. and Mayers, J. (2004) *Desirably diminutive: revisiting the main issues pertaining to small and medium forest enterprises*. International Institute for Environment and Development, Edinburgh (unpublished draft) – drawing on the SME reports to be found at http://www.iied.org/forestry/research/projects/sm_med_entrprise.html

8

Scaling-up Community Efforts to Reach the MDGs – An Assessment of Experience from the Equator Prize

Michael Hooper, Rubab Jafry, Matthew Marolla and Josselin Phan, Equator Initiative, UNDP

The MDGs will only be achieved community by community, family by family, and individual by individual.[1]

1. INTRODUCTION

With the emergence of the Millennium Development Goals (MDGs) as a guiding framework for development assistance, considerations of the role to be played by communities have increasingly focused on scaling-up. At the environment/poverty interface, a growing emphasis on communities as drivers of sustainable development has been accompanied by extensive discussion of how local capacities might be built and community best practices scaled-up. The reality is, however, that these discussions have not led to an improved understanding of what it means to 'scale-up', and the

1. Mark Malloch Brown, UNDP Administrator

relationship between capacity development, scaling-up, and MDG achievement remains murky and largely uninvestigated.

At least some of the lack of clarity surrounding the issue of scaling-up comes from the fact that the role of communities in both conservation and development has undergone rapid change over a short period of time. Until recently, conservation and development were frequently thought to be incompatible or, at least, antagonistic activities. It was thought that economic growth inevitably led to environmental degradation and loss of biodiversity while conservation impeded development and limited opportunities for local employment and economic growth.[2] Since the 1980s, however, this viewpoint has softened and conservation and poverty reduction have increasingly been seen as complementary activities.[3]

It is now increasingly recognised that communities are eager to balance poverty reduction with conservation and are often able to use conservation itself as a means to promote development and income generation

A major reason for this reassessment of the relationship between conservation and development is an improved understanding of the importance of communities, local participation, and community-led development.[4] It is now increasingly recognised that communities are eager to balance poverty reduction with conservation and are often able to use conservation itself as a means to promote development and income generation. Ecotourism, the sale of environmentally friendly products, and the sustainable harvesting and marketing of natural goods are only a few of the ways in which communities are rewriting the historic conflict between conservation and development. At the same time, however, this relatively newfound appreciation for communities means that some of the most central principles of the community-led development and conservation paradigms – such as the topic of scaling-up – are poorly understood in both theory and practice.

This chapter draws on the experience of 25 finalists for the

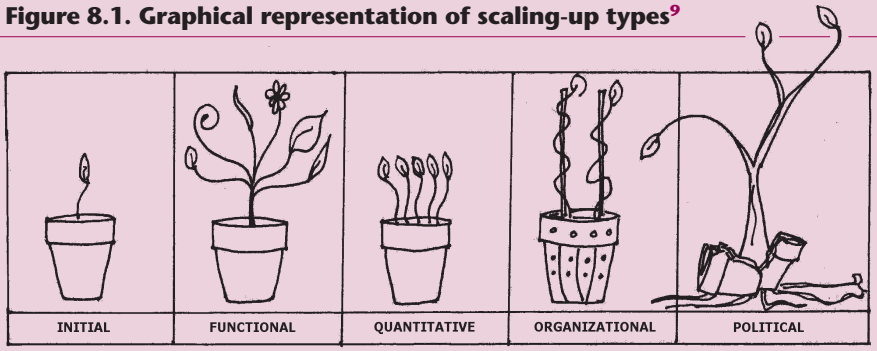
2. Brown, K. (2002). 'Innovations for conservation and development'. *The Geographical Journal,* 168(1), 6-17.
3. Blaikie, P. and Jeanrenaud S. (1997). 'Biodiversity and Human Welfare'. In Ghimire, K. and M. P. Pimbert, (Eds., pp.46-70), *Social Change and Conservation.* London: Earthscan.
4. Hulme, D. and Murphree M. (1999). 'Communities, wildlife, and the new conservation in Africa'. *Journal of International Development, 11,* 277-285.

Equator Prize 2002[5] to investigate further the concept of 'scaling-up'and to explore its implications for achieving the MDGs.

2. WHAT DO WE MEAN BY SCALING-UP?

Limited research has been conducted into the nature of scaling-up efforts undertaken by community groups and initiatives and there is no single definition that clarifies what scaling-up means to, or for, communities. Indeed, scaling-up is typically presented as a single nebulous blanket term covering all forms of expansion, growth and replication. At a broad level, scaling-up refers to efforts 'to bring more quality benefits to more people over a wider geographical area more quickly, more equitably, and more lastingly'.[6] At a finer level of resolution, however, four distinct types of scaling-up have been identified – quantitative, functional, organisational, and political (Figure 8.1).[7 8]

Figure 8.1. Graphical representation of scaling-up types[9]



Functional scaling-up refers to organisations increasing their scope of activity. Through diversification, functional scaling-up allows grassroots and participatory programmes to add complementary activities to their operational range.

5. The Equator Prize is an international award that recognises local efforts to reduce poverty through the conservation and sustainable use of biodiversity. The biennial prize is awarded by UNDP's Equator Initiative. Further information on the work of the Equator Initiative and the prize may be found at http://www.equatorinitiative.org.
6. International Institute of Rural Reconstruction (2000). *Going to scale: Can we bring more benefits to more people more quickly?* Cavite, Philippines: IIRR.
7. Uvin, P. and Miller D. (1996). 'Paths to scaling up: Alternative strategies for local non-governmental organizations'. *Human Organization, 55*, 344-353.
8. The four-part characterisation of scaling-up presented in this chapter draws broadly on the work of Peter Uvin and co-authors, and interested readers are directed to their body of work for further investigation of the topic.
9. Drawing by the authors based on the textual typology of Uvin and Miller, (1996). *op.cit.*

For instance, an initiative specialising in agricultural development may evolve beyond this initial activity and create nutrition, health, or even literacy programmes to better to serve the need of its community.

Quantitative scaling-up occurs when a programme or organisation expands its size by replicating itself or increasing its membership base, its constituency, or its geographic influence. As a structural expansion, quantitative scaling-up can take five different forms: spreading, replication, nurturing, horizontal aggregation, and integration.

Organisational scaling-up takes place when an initiative is strengthened to improve the effectiveness and efficiency of its activities. Communities can achieve this objective financially through new sources of support, through promotion of economic independence (by, for example, creating activities that generate more income), or through reliance on public funds. Institutionally, initiatives can also work to establish external links with public and private agencies to improve management capacity, staff training, and personnel development in ways that will improve long-term effectiveness and sustainability.

Through political scaling-up, community-based organisations can work towards greater empowerment and attempt to change the fundamental roots of underdevelopment

Political scaling-up refers to efforts to engage in the political process and forge relations with the state. Through political scaling-up, community-based organisations can work towards greater empowerment and attempt to change the fundamental roots of underdevelopment. By operating in the political, contextual and wider socio-economic realms, initiatives can effect real political and institutional change that brings significant benefits for community actors in general.

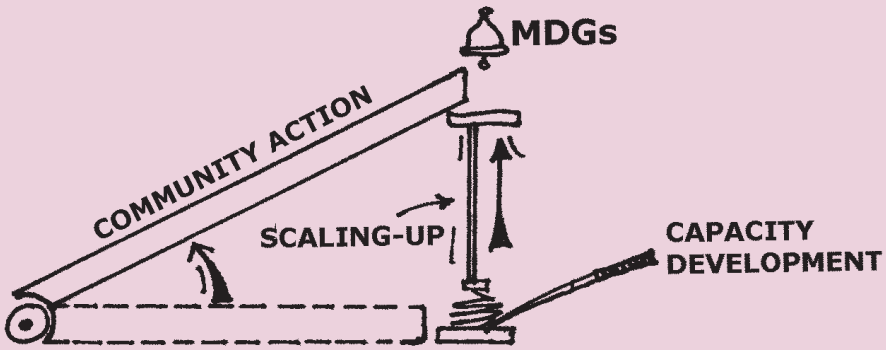
3. SCALING-UP AND THE POLICY LANDSCAPE: TAKING A LOCAL APPROACH TO THE MDGS

To understand better the variety, nature and extent of community scaling-up efforts, we must first answer several important questions regarding the role scaling-up is expected to play in the development and conservation

agendas. The first question asks why the issue of scaling-up has taken on so much importance at the present time. The second question develops this avenue of enquiry further to ask how scaling-up fits into the policy landscape and questions whether some forms of scaling-up are likely to be more important to the MDG effort than others.

It is useful to note that communities are seen as increasingly important to international policy-makers, in part, because their development and conservation activities are expected to contribute to achievement of the MDGs, among other global targets. Indeed, the rising focus of development and conservation agencies on both capacity development and community scaling-up is, to some extent, intended to ensure that the MDGs are achieved (Figure 8.2). This raises important questions about the extent to which communities themselves have similar interests and whether they are able, or willing, to scale-up their activities in ways that would facilitate achievement of the MDGs and other higher-level sustainable development targets.

Figure 8.2. The relationship between capacity building, scaling-up, and community action – defining the policy landscape for communities.



It is perhaps not surprising that the issue of scaling-up has risen to prominence in conjunction with the ascendancy of the MDGs. There is, after all, now a growing sense that the MDGs will only be achieved with the full participation of

local people.[10] There is also a sense that – as the target date for the MDGs draws closer – there is a need to find areas for progress that could be considered 'low hanging fruit'. The scaling-up of community successes is one area where it is hoped that progress towards the MDGs might make great headway. This is because community engagement and participation are not only important at the local level, but are also vital to successful regional and national progress towards the MDGs as well. Indeed, one of the most important lessons of the last several decades of development assistance is that progress is much more readily achievable when the needs and interests of beneficiaries guide aid delivery and when communities are active participants in conservation and development.[11] The result has been increasing calls by policy-makers at the international level for widespread community capacity development, an increased focus on community action, and the scaling-up of successful community practices.

One of the most important lessons of the last several decades of development assistance is that progress is much more readily achievable when the needs and interests of beneficiaries guide aid delivery and when communities are active participants in conservation and development

Despite a growing consensus that scaling-up is desirable, little discussion has occurred around what types of scaling-up might be best suited to advance the MDG agenda or how desired levels of scaling-up might be achieved. Considering the urgency of the MDGs, it is reasonable to assume that the most important forms of scaling-up will be those that yield the greatest gains – according to the terms by which the goals are measured. Any effort to scale-up successful community initiatives is likely to produce *some* positive movement towards the MDGs. However, since the MDGs are measured broadly – at the national level and according to relatively coarse measures – some types of scaling-up are likely to contribute more to the MDG effort than others.

The most intuitive and commonly held understanding of the term scaling-up relates to the simple replication of projects and activities – this is quantitative scaling-up. In terms of achieving the MDGs, this conception of scaling-up will clearly be among the most important of the four types.

10. Sachs, J. (2003). 'An Interview with Jeffrey Sachs'. *Between the Lines, Issue 3*, 3.
11. Malik, K. (2002). 'Capacity and Development'. In Fukada-Parr, S. et. al. (Eds., pp.24-42), *Capacity for Development, 8 New Solutions to Old Problems.* London: Earthscan Publications Ltd.

The multiplication of successful community initiatives will be a necessary component of any push to reach the poverty reduction and sustainability targets of the MDGs, since progress will only be achieved if more successful initiatives are added to existing efforts.

However, the simple replication of community initiatives alone will be insufficient to achieve the MDGs since, to have maximum impact, this replicative process cannot be undertaken in a vacuum. For this reason, the most important form of scaling-up is likely to be political scaling-up. By striving to reduce and eliminate the vacuum in which community initiatives operate and by working to create fertile ground for new endeavours, political scaling-up will be vital to the success of the MDG agenda and a necessary precursor to significant gains achieved through other forms of scaling-up.

Political scaling-up is especially important to the MDG effort since it allows for a unique form of expansion. It facilitates the growth of community initiatives by building a power base for addressing the underlying causes of underdevelopment. Instead of simply providing and replicating services, political scaling-up allows communities to engage in political and social efforts to combat sources of poverty and environmental degradation at the most

Box 8.1: Political Scaling-up in Cameroon

The Waza Logone region of Cameroon is home to a 170,000 hectare national park and extensive floodplain biodiversity. It is also a zone of intense fishing and agricultural activities, livestock production, and - increasingly - tourism. The region was disrupted ecologically, socio-economically, and hydrologically in 1979 by the installation of a hydro-agricultural dam that damaged productive systems and natural habitat in Waza National Park. Through a participatory partnership, the Cellule d'Appui à la Conservation et aux Initiatives de Développement Durable (CACID) brought together government organisations, traditional and administrative authorities, and the private sector to restore, conserve, and manage the Waza Logone floodplain in a sustainable manner.

CACID used their Equator Prize 2002 award money to undertake a comprehensive and strategic management planning process. The strategic planning process focused on information and awareness-raising for local elected representatives and local and provincial administrative authorities. It also incorporated an evaluation of current community initiatives and identified pilot communities for future work and assistance. The process involved workshops at the community level and the monitoring and evaluation of the status of planning and awareness among local and regional communities and policy-makers.

comprehensive level. This not only furthers immediate goals, but also helps achieve wider results by gaining support for local action from political actors and policy-makers (Box 8.1). Political scaling-up is also extremely important because there is an important connection between local scaling-up and national political action, and both are required to create an enabling environment for achievement of the MDGs. For example, in a study of scaling-up in agroforestry, it was found that 'local policy makers [are] at least as important for promoting scaling-up…as national policy makers based in the capital city'.[12] Political scaling-up activities on the part of communities will be an important component of any effort to create a supportive policy environment for the growth and replication of successful local initiatives.

Political scaling-up activities on the part of communities will be an important component of any effort to create a supportive policy environment for the growth and replication of successful local initiatives

4. AN ANALYSIS OF SCALING-UP EXPERIENCES FROM THE EQUATOR PRIZE 2002

A study of community initiatives actively working to reduce poverty and conserve biodiversity at the local level conducted by the Equator Initiative, found that the majority of community initiatives in the study were interested in scaling-up. Of 25 communities surveyed (Table 8.1), 19 were actively engaged in some form of scaling-up – meaning that they spent all or most of their Equator Prize capacity development funds (valued at US$ 30,000) on scaling-up activities. Most initiatives focused on organisational and quantitative scaling-up (Box 8.2), with only two initiatives pursuing political scaling-up and only one pursuing functional scaling-up. Underlying differences in the nature of the community initiatives may partially explain these differences in scaling-up behaviour and suggest possible improvements – particularly important in the push to achieve the MDGs – in the way that funds and resources are directed toward community initiatives.

Several possible explanations exist for the differences in community approaches to scaling-up observed in this study

12. Franzel, S., Cooper P., and Denning G. L. (2002). *Development and agroforestry*. Oxford: Oxfam Press.

Table 8.1: Community Initiatives involved in the Equator Initiative Study

Name of the Initiative	Country	Type of scaling-up employed	Direct/ Indirect	Leader-ship
Association of Manambolo Natives (Fitema)	Madagascar	F	D	C
Cananeia Oyster Producers Cooperative	Brazil	N/S	D	C
Empresa Forestal Integral de Bayamo	Cuba	N/S	D	G
Hashi Soil Conservation Project	Tanzania	N/S	D	G
Suledo Forest Community	Tanzania	N/S	D	N
Toledo Institute for Development and Environment	Belize	O	D	N
Fiji Locally-Managed Marine Area Network	Fiji	O	D	N
Couro Vegetal da Amazônia Project	Brazil	O	D	Pv
Honey Care Africa	Kenya	O	D	Pv
CBIRD Centre, Sub Tai	Thailand	Q	D	C
Moheli Marine Park	Comores	Q	D	C
Il Ngwesi Group Ranch	Kenya	O	D	C
Associação Vida Verde da Amazônia	Brazil	O	D	C
Tribal Communities of the Jeypore Tract of Orissa	India	O	D	C
Ese'eja Native Community of Infierno	Peru	O	D	C
Kerala Kani Samudaya Kshema Trust	India	O	D	C
Uma Bawang Resident's Association	Malaysia	Q	D	C
Medicinal Plants Conservation Centre	India	N/S	I	N
Iniciativa Talamanca	Costa Rica	N/S	I	N
Bolsa Amazonia	Brazil	O	I	Pv
Cellule d'Appui à la Conservation et aux Initiatives de Développement Durable (CACID)	Cameroon	P	I	N
Inter-Institutional Consortium for Sustainable Agriculture on Hillsides/River Cabuyal Watershed Users Association	Colombia	Q	I	C
Asociacion de Comunidades Forestales de Peten	Guatemala	Q	I	N
Café de la Selva	Mexico	Q	I	Pv
Mosquitia Pawisa Agency for the Development of the Honduran Mosquitia	Honduras	Q/P	I	N

Key: [Pv = Private Sector-Led / C = Community-Led / G = Government-Led / N = NGO-led]
[Q = Quantitative Scaling-Up / N/S = No Scaling-Up / O = Organisational Scaling-Up /
F = Functional Scaling-Up / P = Political Scaling-Up]

Box 8.2: Quantitative scaling-up of organic coffee production in Mexico

La Selva Café is a chain of cafés that sells organically-grown coffee at locations in Mexico City and in the United States and Europe. La Selva Café supports, and works with, indigenous communities in the state of Chiapas and, together with Union de Ejidos de la Selva, has developed an effective strategy for improving the natural environment of Chiapas while increasing incomes and living standards for coffee workers. The sale of coffee through shops – made possible through a partnership between peasant organisations and private sector entrepreneurs – has brought increased income to members of the Union de Ejidos.

La Selva Café used their Equator Prize 2002 award money to form – together with their local partners – a new corporate entity, La Selva International S.C. This organisation was created to promote the commercial expansion of La Selva Café nationally and internationally and to develop new operations, outlets and café locations.

– and notably for the preference for quantitative and organisational scaling-up. The first possible explanation is that quantitative and organisational scaling-up can, from a community perspective, be **undertaken more immediately and bring more immediate results** than can either political and functional scaling-up. One reason for the relative 'immediacy' of quantitative and organisational scaling-up is that they require fewer new resources and skills on the part of communities. As a consequence, they are likely to have the most direct and visible impact on the day-to-day operations of local initiatives and yield the greatest short-term rewards for community members. For example, when a community with limited resources is assessing needs, the impacts of expanding and replicating existing activities (quantitative), or building and strengthening institutional skills and resources (organisational) are likely to be more immediate than launching a programme in a new field (functional) or effecting policy change (political). Resource constraints – both financial and human – faced by community initiatives and a need for immediate results may, therefore, help to explain why organisational and quantitative scaling-up are most likely to be undertaken by the emergent initiatives in this study.

Across all of the community initiatives, immediate needs appear to take precedence over longer-term needs. The general reluctance of the study initiatives to engage in functional scaling-up indicates that few are at a stage of development where formulation of new programmes can

take priority over maintaining existing activities and trying to enhance core impact. The reluctance to engage in political scaling-up may, in a similar fashion, indicate that few of the study initiatives are ready to begin focusing attention on the quality of the enabling environment for local action, no matter how helpful this might be in the long run. When existing needs are great, it will be difficult to justify engaging in forms of scaling-up that divert attention – at least in the short term – from the most immediate issues facing the community. Thus, it appears that capacity development funds were dedicated by initiatives to those forms of scaling-up that can meet the needs of community members without compromising existing activities or diverting resources from core activities.

A related explanation for differences in scaling-up across the study initiatives may be connected to the relative **risks** associated with the different forms of scaling-up. For instance, it is likely that both organisational and quantitative scaling-up are less risky to emergent community initiatives, given that they focus on existing activities, and that communities are, therefore, more likely to devote scarce capacity development funds to these forms of scaling-up. Political and functional scaling-up, by contrast, involve the development of new activities and thus present considerably more risk.[13]

Efforts to promote an enabling environment, by engaging with political functionaries and by becoming involved in politics and policy formulation, have the potential to undermine and jeopardise the hard-fought gains that initiatives have made at more basic levels

The tendency toward risk aversion is not surprising. Certainly with regard to political scaling-up, the climate in many developing nations means that actively engaging in political manoeuvring could bring considerable financial, personal, and livelihood risks. Efforts to promote an enabling environment, by engaging with political functionaries and by becoming involved in politics and policy formulation, have the potential to undermine and jeopardise the hard-fought gains that initiatives have made at more basic levels. The risks associated with functional scaling-up are more basic – simply, that directing energies

13. Uvin, P. (1995). 'Fighting hunger at the grassroots: Paths to scaling up'. *World Development* 23(6):927-939.

to new areas may compromise existing operations. While the potential gains from both of these types of scaling-up activities may be great, their lack of frequency may indicate that the risks associated with each are simply higher than can be accepted.

The willingness of community initiatives to scale-up, and the form of scaling-up pursued, may also reflect to a large degree the priorities of the community initiatives' core constituencies. The Equator Initiative study found, for example, that only those initiatives that work indirectly with community members appear to engage in political scaling-up. These initiatives also demonstrate a greater preference for quantitative scaling-up. This is an interesting observation since those community initiatives that happen to work indirectly with communities also nearly always work with multiple communities. They are also almost always directed or led, in part, by government, NGOs, or the private sector. It appears that something about this group sets it apart from those initiatives that work directly with community members. It is posited here that this difference lies in the constituency of these community initiatives. Indirect initiatives have less direct responsibility to community members and tend to serve as networking agencies, bringing together entire communities as their units of interest. As a consequence, both political scaling-up and quantitative scaling-up are less of a challenge for this group. It is not a great extension from their current programme of work to engage in the political or policy-making processes or to try to expand and replicate their efforts. Since communities as a whole are frequently their unit of interest, rather than individual community members, these initiatives are less geographically constrained and therefore face fewer barriers to political and quantitative scaling-up.

The willingness of community initiatives to scale-up, and the form of scaling-up pursued, may also reflect to a large degree the priorities of the community initiatives' core constituencies

Those initiatives that work directly with community members primarily engage in organisational and quantitative scaling-up, with a particular preference for the organisational variant. While these initiatives work across both single and multiple communities, they are mainly led

and initiated by communities themselves. Consequently, the way in which these initiatives choose to scale-up reflects a heightened responsiveness to community needs and a focus on satisfying the core goals of community members. The closer the individual needs and personal concerns of community members are to the leadership of the initiative, the less likely the initiative is to engage in riskier, longer-term forms of scaling-up, namely political or functional.

It is interesting to observe that only two cases in this study were found to engage in political scaling-up and that both are found in the category of indirect initiatives. This finding is similar to wider research on the nature of NGOs and community organisations, which has found that 'higher generation' organisations are more likely to 'look beyond the individual community and seek changes in specific policies and institutions on local, national, and global levels'.[14] The direct initiatives in this study can be considered similar to what Korten[15] describes as 'lower generation' organisations, which often provide direct relief or support to community members and may be restricted in scope. Conversely, the characteristics of the indirect initiatives in this study – working across multiple communities and being led, at least in part, by NGOs, government, or the private sector – parallel traits others have associated with a tendency towards political scaling-up.

The closer the individual needs and personal concerns of community members are to the leadership of the initiative, the less likely the initiative is to engage in riskier, longer-term forms of scaling-up, namely political or functional

5. THE WAY FORWARD

There are clearly considerably different abilities and interests in scaling-up among different types of community initiatives. The Equator Initiative study indicates that community initiatives that work indirectly with community members may be the best situated to engage in political and quantitative scaling-up. Given that we have identified political and quantitative scaling-up as critically important to achievement of the MDGs, these findings could have important policy ramifications. This study suggests that

14. Korten, D. (1990). *Getting to the 21st Century, voluntary action, and the global agenda.* West Hartford: Kummarian Press.
15. *Ibid.*

An important role for conservation and development agencies will be to assist community initiatives in overcoming the challenges associated with political scaling-up, forging links to policy-makers and the political process in ways that minimise risk and interference with the delivery of essential short-term deliverables

achievement of the MDGs may be advanced if initiatives with certain traits – working indirectly with community members, working with multiple communities, and having leadership elements drawn from the private sector, government, or NGOs – are targeted with appropriate resources and funding. While these findings may not be statistically conclusive, they support the outcomes of previous research into community scaling-up, and suggest a possible course of action to better ensure achievement of the MDGs.

To maximise progress towards achievement of the MDGs, special efforts should be taken to encourage political scaling-up amongst community initiatives, particularly those with traits lending themselves to this behaviour. An important role, then, for conservation and development agencies will be to assist community initiatives in overcoming the challenges associated with this form of scaling-up, forging links to policy-makers and the political process in ways that minimise risk and interference with the delivery of essential short-term deliverables. Experience from the Equator Initiative suggests that one way to do this effectively is by linking local community leaders, serving as ambassadors and advocates, with policy- and decision-makers in facilitated situations that put community, national, regional and global leaders all on an equal footing. In numerous and diverse instances this approach has proved to be highly effective at speeding the rate of political scaling-up and is something which, itself, warrants greater replication and expansion.

9

Linking Biodiversity Conservation and Poverty Reduction to Achieve the Millennium Development Goals[1]

Peter Hazlewood, Geeta Kulshrestha, and Charles McNeill, UNDP

To ensure the survival of both the tree and those who have no alternative but to cut it, it is imperative that the environmental element of development be automatically integrated into all actions.[2]

1. BRIDGING THE CONSERVATION-DEVELOPMENT DIVIDE: GETTING BIODIVERSITY CONSERVATION INTO THE MAINSTREAM OF DEVELOPMENT POLICY AND PLANNING

Biodiversity conservation – the maintenance of diverse and healthy ecosystems and ecosystem services – is linked in fundamental ways to human wellbeing. These linkages are especially critical for people living in poverty. Previous chapters in this volume have described how the environment and

1. This chapter draws heavily on the DFID, EC, UNDP & the World Bank (2002) publications: *Linking Poverty Reduction and Environmental Management: Policy Challenges and Opportunities.*
2. Cheikh Diong, I. and Allard, D. (1994). 'For a better understanding of environment/development dynamics.' *Voices From Africa*. United Nations Non-Governmental Liaison Service. http://www.unsystem.org/ngls/documents/publications.en/voices.africa/number5/vfa5.05.htm

environmental change affect the poor in terms of three key dimensions of human poverty:

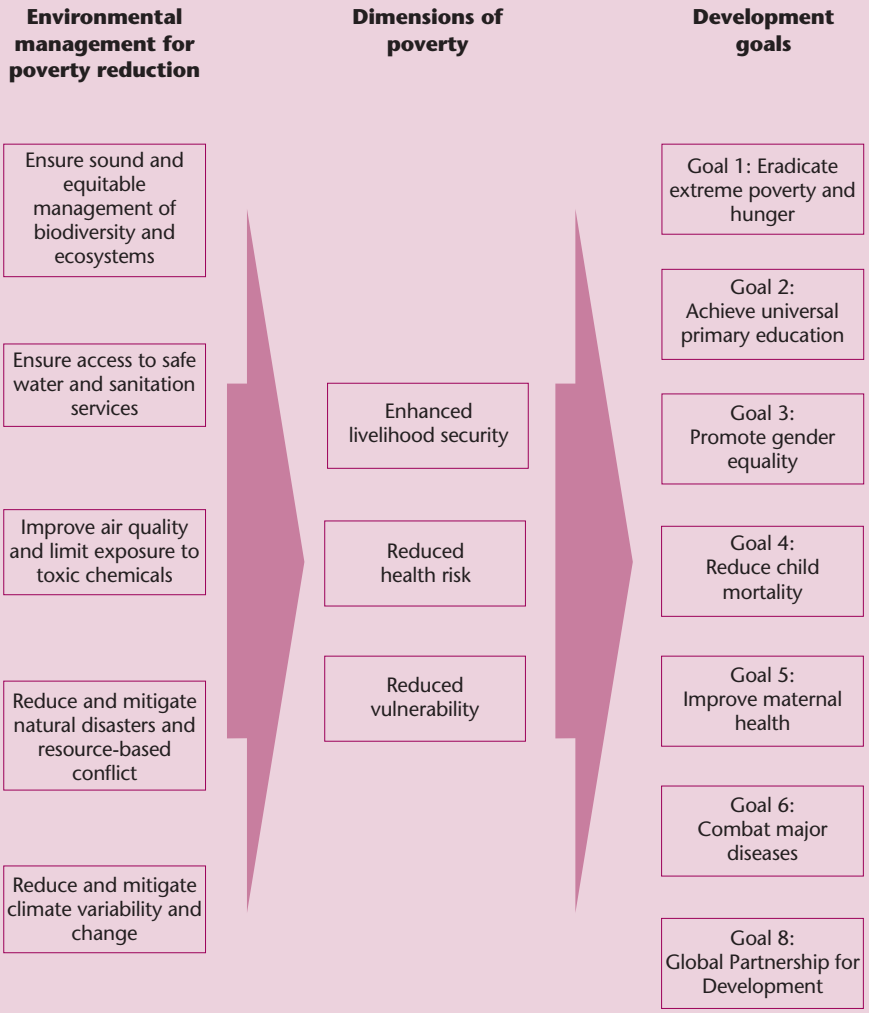
- **Livelihoods** – poor people tend to be most dependent upon the environment and the direct use of natural resources for their livelihood opportunities, and therefore are the most severely affected when the environment is degraded or their access to natural resources is limited or denied (see Chapters 1, 6 and 7 on various dimensions of biodiversity-livelihood relationships).
- **Health** – poor people suffer most when water, land, and the air are polluted, and environmental risk factors are a major source of health problems in developing countries (see Chapter 2 on biodiversity and health).
- **Vulnerability** – the poor are particularly vulnerable and are most often exposed to environmental shocks and stresses such as floods, prolonged drought, and the anticipated impacts of global climate change (see Chapter 3 on biodiversity-climate-vulnerability links), and access to natural resources often provides households with a critical 'safety net' during difficult times.

Given the interdependent links between environmental conditions and key dimensions of human wellbeing, biodiversity conservation cannot be tackled separately from wider development concerns, and efforts to eradicate poverty must go hand-in-hand with action to conserve biological resources and maintain healthy ecosystems.

Poor people tend to be most dependent upon the environment and the direct use of natural resources for their livelihood opportunities, and therefore are the most severely affected when the environment is degraded or their access to natural resources is limited or denied

At the 2002 World Summit on Sustainable Development (WSSD), world leaders reaffirmed the Millennium Development Goals (MDGs) as a framework for action, and agreed to a number of new commitments and targets to further advance poverty reduction and sustainable development objectives. Figure 9.1 provides a simplified framework for understanding how environmental management relates to poverty reduction, and why these poverty-environment linkages must be at the core of action to achieve the MDGs. Across these areas of concern, a growing body of research and practical experience

Figure 9.1: Environment and the Millennium Development Goals



reveals many effective approaches to reducing poverty and improving the environment – particularly at the community level. But these local processes are often isolated successes, and there are significant policy and institutional barriers to their wider application. These barriers are linked to broader issues of governance (including power relations) and economic and social policy

that strongly influence how the environment is managed and how benefits and costs are distributed – and often are beyond the control of environmental institutions (see Chapter 5 on reconciling global and local priorities for conservation and development, and Chapter 8 on scaling-up local successes).

For biodiversity conservation to contribute fully to poverty reduction and the MDGs, a fundamental shift is needed to more systemic and people-centred approaches that build on poor people's priorities and capabilities; that effectively engage all stakeholders in addressing the underlying policy and institutional drivers of environmental degradation; and that empower poor and vulnerable groups with the assets, rights, and entitlements they need to improve their lives through sound environmental management. Meeting this challenge calls for a new approach and broad-based commitment to integrating the environmental concerns of poor and vulnerable groups into mainstream development processes at global, national, and local levels.

For biodiversity conservation to contribute fully to poverty reduction and the MDGs, a fundamental shift is needed to more systemic and people-centred approaches that build on poor people's priorities and capabilities

2. LINKING BIODIVERSITY CONSERVATION AND POVERTY REDUCTION IN GLOBAL POLICY FRAMEWORKS

2.1 The MDG framework

The Millennium Development Goals (MDGs) provide a framework for integrating biodiversity conservation into a broader development policy agenda focused on poverty reduction and human development. The MDG framework has garnered extensive support among governments and non-governmental organisations (NGOs), and it is clear that the MDGs will shape the development agenda for the next decade and direct a significant proportion of the world's development co-operation funding.

While MDG 7 ('*Ensure environmental sustainability*') directly concerns biodiversity, the wise use of biological resources

clearly underpins the range of development priorities encompassed by all eight MDGs.[3] For instance, maintaining the integrity of ecosystem services is of central importance to achieving MDG 1, eradication of extreme poverty and hunger. This and other links between biodiversity and the MDGs are illustrated in Box 9.1.

Because biodiversity is such an important asset for the poor, progress toward achieving the MDGs will not be sustainable unless conservation and wise use of biodiversity is built into

Box 9.1: How Biodiversity Contributes to Achievement of the Millennium Development Goals (MDGs)

MDG 1: Eradicate extreme poverty and hunger
Biodiversity and ecosystem services are essential to the productivity of agriculture, forests, and fisheries. The soil fertility, erosion control, and nutrient cycling provided by ecosystems enables people to derive food, water, fibres, fuel, and income and livelihoods from natural and managed landscapes. Degraded ecosystems make the poor more vulnerable to increased frequency and impact of droughts, floods, landslides, and other natural disasters.

MDGs 2 and 3: Achieve universal primary education; Promote gender equality and empower women
When biodiversity and ecosystem services are degraded or destroyed, the burden falls disproportionately on women and girls, who are forced to travel farther and spend more time in the search for drinking water, fuel wood, and other forest products. This increased burden limits their opportunities for education, literacy, and income-generating activities.

MDGs 4, 5, 6: Reduce child mortality; Improve maternal health; Combat major diseases
Genetic resources are the basis for modern and traditional health care treatments. Some 80 per cent of the world's people rely on traditional health care systems that use traditional medicines, mostly derived from plants found in the local environment. The global pharmaceuticals industry also depends on genetic diversity: of the 150 most frequently prescribed drugs, more than half are derived from or patterned after the natural world.

Also affecting maternal and child health is the increased spread of malaria, dengue fever, and other insect- and water-borne diseases linked to degraded ecosystems. Loss of biodiversity and ecosystem function can lead to economic disruption, population dislocation, and urban crowding, which encourages the spread of communicable diseases such as tuberculosis, hepatitis, and HIV/AIDS.

MDG 8: Develop a global partnership for development
Maintaining biodiversity and the integrity of critical ecosystem functioning will require global partnerships—encompassing government, the private sector, and civil society in developing and industrial countries. MDG 8 embodies, among other things, the commitment of the developed countries to increase development assistance and open their markets to developing-country products—efforts that should undertaken in ways that support rather than degrade the biological resource base on which achievement of the MDGs ultimately depends.

3. See Chapter 1 of this volume and also Koziell, I. & McNeill, C.I. (2002). *Building on Hidden Opportunities to Achieve the Millennium Development Goals: Poverty Reduction through Conservation and Sustainable Use of Biodiversity.* IIED Opinion Series, London. Pisupati, B and E. Warner (2003). *Biodiversity and the Millennium Development Goals.* IUCN Regional Biodiversity Programme, Asia.

the process. One important function of the MDG process and approach should be to help identify 'win-win' solutions that simultaneously conserve biodiversity and reduce poverty – such as ecoagriculture (see Chapter 6), new markets for biodiversity-friendly products, and direct payments to farmers for maintaining ecosystem services (see Chapter 4).

Unfortunately, MDG 7 on environmental sustainability is not yet receiving sufficient attention from country-level MDG activities.[4] This serious problem is due in part to deficiencies with the way that MDG 7 is currently formulated. Among all the goals, MDG 7 is the least clearly articulated, making it that much more difficult to integrate environment-poverty links into a broader development framework. The first global target under MDG 7 ('Integrate principles of sustainable development into country policies and programmes and reverse the loss of environmental resources') is in urgent need of revision since it defies clear definition and is difficult to measure. The global targets and indicators of MDG 7 are not logically integrated, and the indicators need to better capture the many ways in which the livelihoods of the rural poor – and, to a lesser extent, the urban poor – depend on biodiversity and ecosystem services.[5] The current indicators fail to cover some key areas of environmental sustainability, and they do not adequately reflect country-level priorities. In many cases, data gaps arising from unreliable systems of data collection and quality assurance hinder indicator development, monitoring and reporting.

Among all the goals, MDG 7 is the least clearly articulated, making it much more difficult to integrate environment-poverty links into a broader development framework

As important as it is to strengthen the global MDG framework, even more crucial are country-level efforts to operationalise MDG 7. The global MDG 7 targets and indicators are mere starting points for this process. The key to success lies within country-led mechanisms to set, measure, and achieve country-specific environmental

4. Ghanime, L. and N. Smith. (2004). *UNDP Practice Note: Monitoring Country Progress Toward MDG 7*. Final draft, August 2004. UNDP, New York.
5. For a discussion of the limitations of the MDG7 biodiversity indicators, see Roe, D (2003) 'The MDGs and natural resources management: Reconciling sustainable livelihoods and resource conservation or fuelling a divide?' In D. Satterthwaite (ed): *The Millennium Development Goals: Hitting the Target or Missing the Point?* IIED, London.

sustainability targets that draw on and harmonise targets in existing development frameworks and strategies, such as National Sustainable Development Strategies, Poverty Reduction Strategies, and National Conservation Strategies.[6] One example of a country that has successfully adapted the global MDG targets to suit national conditions and priorities is Vietnam, which integrated time-bound environmental indicators from other national strategies into its national MDG process. Such country-led efforts to add and/or refine targets and indicators to reflect specific national priorities help ensure that environmental sustainability is part of the mainstream national development agenda. Increasingly, efforts to mainstream environmental sustainability are focused on establishing national MDG targets and linking them to the Poverty Reduction Strategy process (see Section 9.3 below).

Increasingly, efforts to mainstream environmental sustainability are focused on establishing national MDG targets and linking them to the Poverty Reduction Strategy process

Another weakness in the current MDG framework and process is the marginal consideration given to environmental sustainability and biodiversity conservation in the targets and indicators for MDG 8 ('*Develop a Global Partnership for Development*'). Possibly more than any of the other goals, MDG 8 – particularly the targets related to aid and trade – could have considerable adverse impacts on biodiversity. Environmental sustainability needs to be integrated into these targets, and associated indicators should measure the extent to which changes in official development assistance and trade arrangements either support or harm the biological resource base.

Proposals to update and make corrections to the global MDG framework based on the track record to date will be considered by the United Nations following the Millennium +5 review session in 2005. A number of initiatives are grappling with the challenge of how to assess 'environmental sustainability' properly,[7] and it is critical that the institutions involved collaborate closely to feed the best results into the UN process.

6. See Dalal-Clayton, B. (2003) 'The MDGs and sustainable development: the need for a strategic approach.' In D. Satterthwaite (ed): The Millennium Development Goals: Hitting the Target or Missing the Point? IIED, London.

Although they are not officially part of the MDG framework, a number of additional targets under MDG 7 were adopted at the World Summit on Sustainable Development in Johannesburg, South Africa in 2002 (see Box 9.2). These unofficial targets, known as the 'MDG Plus Targets', relate to biodiversity, fishing, marine protected areas, harmful chemical substances, and sanitation, and indicators for monitoring progress toward achieving them have yet to be developed. These additional targets – along with targets on air quality, land productivity, and climate change – deserve greater public recognition as important steps to ensure environmental sustainability.

Of course, the UN Millennium Declaration, from which the MDGs were derived, encompasses a broader agenda that deserves renewed attention. Among other issues, the

Box 9.2: MDG 'Plus' Targets

Biodiversity
- Achieve by 2010 a significantly reduction in the current rate of loss of biodiversity.
- Establish representative marine protected area networks by 2012.
- Encourage by 2010 the application of the ecosystem approach.

Fisheries
- Maintain or restore fish stocks to a level that can produce a sustainable yield by 2015.

Water
- Develop integrated water resources management and water efficiency plans by 2005, with support to developing countries.

Sanitation
- Halve the proportion of people who do not have access to basic sanitation by 2015.

Renewable Energy
- Sustainably increase the global share of renewable energy sources with the objective of increasing its contribution to total energy supply.

Chemical Pollution
- Achieve by 2020 that chemicals are used and produced in productive ways that lead to the minimisation of significant adverse affects on human health and the environment.

Source: Ghanime, L. and N. Smith. (2004). *UNDP Practice Note: Monitoring Country Progress Toward MDG 7*. Final draft, August 2004. UNDP, New York.

7. Along with the UN Millennium Project, an independent advisory body directed by prominent economist Jeffrey Sachs on behalf of the UN Secretary General, and the UN Inter-agency & Expert Group on MDG Indicators, the following groups, among others, are also engaged in this work: Columbia University/CIESEN, Convention on Biological Diversity, Ecological Footprint Network, IIED, IISD, OECD, SCOPE, UNEP-WCMC, Yale University, World Resources Institute, as well as a consortium of NGOs including BirdLife, Conservation International, IUCN, The Nature Conservancy, Wildlife Conservation Society, and WWF.

Declaration calls for the full implementation of the Convention on Biological Diversity (CBD), sustainable management of forests and water, and reduction of greenhouse gas emissions.

One highly encouraging trend related to the MDGs has been the increasingly active involvement of local communities in global development fora. This emerging movement is influencing global discussions and negotiations on the MDGs by showcasing successful local-level initiatives and processes. (See Chapter 6 for further discussion of the links between global and local conservation and development priorities.) Providing such 'community dialogue spaces' at international meetings and events highlights the message that the success of biodiversity conservation efforts depends on local communities at the forefront of progress towards the MDGs.[8]

Governments need to ensure that action to meet their international environmental commitments does not work against the interests of poor and vulnerable groups

2.2 Multilateral Environmental Agreements (MEAs)

Globalisation of the economy and global environmental change have focused international attention on global environmental public goods, including climate stability and maintenance of biodiversity, that provide many benefits for the poor. This poses a twin challenge to governments. On one hand, governments need to pursue action toward achieving the MDGs in ways that are consistent with protection of critical global environmental resources, including biodiversity.[9] At the same time, governments need to ensure that action to meet their international environmental commitments does not work against the interests of poor and vulnerable groups, for example by restricting access to common property resources on which poor households depend for their well-being.

Several multilateral environmental agreements (MEAs) provide opportunities to enhance the contribution of

8. For example, the 'Community Kraal' at WSSD, August 2002, the 'Community Park' at the IUCN World Parks Congress, September 2003, the 'Community Kampung' at CBD COP 7, February 2004, the 'Community Shamba' at the Ecoagriculture Summit, September 2004, and the 'Community Vilaj' at the forthcoming SIDS conference, January 2005.

9. Convention on Biological Diversity (2003). 'Follow Up to the World Summit on Sustainable Development, Multi-Year Programme of Work on the Conference of the Parties up to 2010, Strategic Plan and Operations of the Convention'. Note by the Executive Secretary on the programme of work of the Convention and the MDGs, 30 November 2003.

biodiversity to poverty reduction. Among the key international agreements for integrating biodiversity-poverty links with the MDGs are the Convention on Biological Diversity (CBD), the Convention to Combat Desertification (CCD), and the UN Framework Convention on Climate Change (UNFCCC). Under the CBD, for example, almost every developing country Party has identified poverty as a major threat to biodiversity, and most national biodiversity strategies and action plans designate poverty eradication as a central aim.

The same holds true for the National Action Programmes under the CCD. Yet considerable work remains to be done to ensure that the frameworks and work programmes of the MEAs better integrate poverty reduction efforts and other priorities of the poor. This effort is already underway in the context of the CBD, which has been quite progressive and pro-active in embracing the MDG framework, and improved linkages with the MDGs are currently being incorporated into CBD work programmes.[10]

Considerable work remains to be done to ensure that the frameworks and work programmes of the MEAs better integrate poverty reduction efforts and other priorities of the poor

One possible means of promoting synergies and avoiding conflicts with achievement of the MDGs is for Parties to the MEAs to begin to report on their efforts to integrate poverty. For example, the reporting matrix for the upcoming round of national reports under the CBD could incorporate a series of questions designed to identify the efforts of Parties to make the links between poverty eradication and biodiversity. UNDP and others have been advocating linkages between the international target to 'significantly reduce the rate of loss of biodiversity by 2010' of the CBD and WSSD, and the related targets of MDG 7. The 2010 target could be seen as an important milestone towards the later (2015) targets of MDG 7, and a framework of indicators relevant for both targets should be devised to bring these processes together.

Biodiversity-poverty links also need to be better represented in efforts to integrate the MEAs into national policy and

10. Two key workshops were held in London in 2003 to explore the role of biodiversity in achieving each of the MDGs, and to link biodiversity targets with the MDG framework UNEP-WCMC. (2003). *Biodiversity after Johannesburg: The Critical Role of Biodiversity and Ecosystem Services in Achieving the United Nations Millennium Development Goals*. Proceedings of conference held 2-4 March 2003, London

planning. The implementation of biodiversity priorities at the national level, for example through National Biodiversity Strategies and Action Plans (NBSAPs), would benefit from integrating links between biodiversity, health and the MDGs. A fundamental problem in most countries is that NBSAPs, like many other environmental plans and strategies, are often not developed as part of broader development strategy and policies. One specific opportunity to achieve such integration is offered by the GEF-supported National Capacity Self Assessment (NCSAs) projects, which are designed explicitly to help countries identify the capacities they need to more effectively mainstream MEAs in their national development.

A fundamental problem in most countries is that National Biodiversity Strategies and Action Plans, like many other environmental plans and strategies, are often not developed as part of broader development strategy and policies

Another important new resource for decision-makers integrating the links between ecosystem change and human wellbeing into policy at all levels is the Millennium Ecosystem Assessment (MA).[11] An international collaboration of natural and social scientists, the MA is an excellent example of a global initiative that integrates a focus on human development within an assessment of the health of the world's ecosystems. The MA work programme focuses on how changes in ecosystem services affect people, and the kinds of responses that can be adopted at the local, national, or global scales simultaneously to improve ecosystem management and contribute to poverty reduction. This global methodology is now being translated into practical tools and approaches to help decision-makers at different levels (regional, national, local) choose among existing policy options and as well as identifying new approaches for integrated management of land, water, and biological resources.

2.3Trade policies

Against a backdrop of growing economic globalisation together with the transboundary nature of many environmental problems, efforts to reduce poverty and improve the environment cannot succeed on a sustainable

11. See http://www.millenniumassessment.org/.

basis through local- or national-level action alone. International trade regimes need to be reformed to create economic policies and conditions conducive to environmentally sustainable trade and investment and to provide opportunities for sustainable growth in developing countries.

The current global trade regime remains one of the most powerful factors curtailing the capacity of poor countries to take advantage of the promise of globalisation and to grow out of poverty. Despite rich countries' rhetoric about commitment to free trade, global markets are regulated by a confusing plethora of bilateral and multilateral trading agreements, tariff and non-tariff barriers, global labour standards, and corporation-specific codes of conduct. The upshot is that when developing countries export to rich country markets, they face tariff barriers four times higher than those encountered by rich countries. When rich countries lock poor people out of their markets, they close the door to one of the most important escape routes from poverty. The last of the MDGs, dealing with global development partnerships, commits the international community to providing duty- and quota-free access to the exports of the least developed countries. While steps have been taken in the right direction by a number of Commonwealth countries (Australia and Canada) and by the European Union, much more could be done to promote market access for the exports of the world's poorer countries.

When developing countries export to rich country markets, they face tariff barriers four times higher than those encountered by rich countries. When rich countries lock poor people out of their markets, they close the door to one of the most important escape routes from poverty

Trade liberalisation can, however, have unpredictable effects on biodiversity and poverty. Among the potential benefits of trade liberalisation are increased growth and improved economic efficiency. However, policies that are poorly designed or implemented can also result in over-exploitation of natural resources, destruction of biodiversity, loss of critical habitats, and degradation of ecosystem functions.

Of particular importance for addressing biodiversity-poverty links is making global trade and environmental regimes

more mutually supportive. This includes strengthening the environmental components in negotiations under the World Trade Organisation (WTO) and the Doha Round. Although the WTO specifically allows some environmental protection – such as import restrictions to meet national environmental, health, and safety standards – current international trade rules prevent governments from setting high environmental standards or labelling requirements for imported products, because these measures could be used to protect domestically-produced goods from competition from imports. WTO's Committee on Trade and Environment is analysing the trade impacts of environmental policies and ways in which international markets can promote production that is both environment-friendly and generates income and development.[12]

Many developing countries are still unable to realise their comparative advantage in agricultural production because farm subsidies and agricultural trade policies in industrial countries depress world prices for farm products

The critical importance of agriculture in reducing poverty creates an urgent need for progress in trade reform and elimination of trade-distorting subsidies for agricultural producers in developed markets.[13] Many developing countries are still unable to realise their comparative advantage in agricultural production because farm subsidies and agricultural trade policies in industrial countries depress world prices for farm products.[14] Protection of agriculture in rich countries leads to dumping of subsidised imports in developing countries, collapsing local agricultural markets, undermining the livelihoods of family farmers, and exacerbating poverty, hunger, and food insecurity.

These subsidies also have the effect of creating barriers to export of agricultural commodities from poorer countries, making poverty reduction more difficult. The World Bank estimates that agricultural protection in the industrial countries costs developing countries more than US$100 billion per year, twice as much as they receive in international aid.[15] However, reduction or removal of

12. Biodiversity Development Project. (2001). 'Trade policies and biodiversity.' *Biodiversity Brief 2*. Online at http://www.iucn.org/themes/wcpa/pubs/pdfs/biodiversity/biodiv_brf_02.pdf.
13. Commission on the Private Sector and Development (2004). *Unleashing Entrepreneurship: Making Business Work for the Poor – Report to the Secretary-General of the United Nations*. UNDP, New York.
14. DFID, EC, UNDP & the World Bank (2002). *Linking Poverty Reduction and Environmental Management: Policy Challenges and Opportunities*. World Bank, Washington DC.

developed country agricultural subsidies would generate strong incentives in developing countries for large-scale increases in agricultural production. This expansion could produce major impacts on land, water, and biodiversity in developing countries, with the direction and magnitude of these impacts depending largely on the prevailing policy environment and incentive structure. It is vital, therefore, to anticipate such global structural change and to develop proactive strategies to ensure that expanded agricultural production in developing countries supports viable win-win options, such as ecoagriculture (see Chapter 5), that benefit small-scale farmers, poverty reduction, and biodiversity conservation. One option could be the redirection of a portion of the agricultural subsidies towards capacity development in developing countries for sustainable agricultural approaches.

It is vital to anticipate global structural change and to develop proactive strategies to ensure that expanded agricultural production in developing countries supports viable win-win options, such as ecoagriculture, that benefit small-scale farmers, poverty reduction, and biodiversity conservation

Creating awareness among Northern consumers about the impacts of their purchasing decisions on Southern producers is another way to promote trade that benefits both biodiversity conservation and poverty reduction. Trade-related standards assuring that exports are produced in environmentally sustainable ways can add value and marketability to commodities produced in developing countries. One prominent example is organic, shade-grown coffees, which continue to earn relatively higher prices in world markets. (See Chapter 4 for an analysis of market-based approaches to biodiversity conservation and their impacts on poverty and Chapter 7 for a discussion of the role of the private sector in stimulating pro-biodiversity business.) The application of certification standards for forest management practices is another promising area.[16] However, compliance with regulations set by importing countries can create challenges for developing countries, which often lack scientific expertise and technical capacity. Trade-related environmental standards need to be combined with capacity development in developing

15. World Bank (2002). *Globalization, Growth, and Poverty: Building an Inclusive World Economy.* A World Bank Policy Research Report. Oxford University Press, Oxford.
16. Bass, S., M. Thornber, S. Roberts and M. Grieg-Gran (2001). *Certification's Impacts on Forests, Stakeholders and Supply Chains.* International Institute for Environment and Development, London.

countries to enable small and medium-sized producers to meet requirements cost-effectively. (See Chapter 7 and Case Study 4 for an analysis of the barriers to pro-biodiversity business approaches in small and medium enterprises.)

In many developing countries, poor producers do not have access to information, credit, and other resources that would enable them to take advantage of the opportunities provided by liberalised trade policies in ways that do not deplete biodiversity. Trade reform must be accompanied by efforts to assist poor farmers in developing countries. If such reforms are allowed to marginalise poor producers, they may be forced to fall back on unsustainable natural resources exploitation.

3. LINKING BIODIVERSITY CONSERVATION AND POVERTY REDUCTION IN NATIONAL POLICY FRAMEWORKS

Biodiversity-poverty relationships need to be integrated into mainstream national development policy and planning processes, including poverty reduction strategies, macroeconomic and sectoral policies, and the budget process. This integration will make it possible to forge a broad-based, more co-ordinated response to poverty-environment challenges, to achieve synergies between diverse interventions across many sectors and levels of action, and to ensure that adequate domestic and external resources are being allocated and effectively targeted.

Biodiversity-poverty relationships need to be integrated into mainstream national development policy and planning processes, including poverty reduction strategies, macroeconomic and sectoral policies, and the budget process

3.1National poverty reduction strategies

National poverty reduction strategies and the Poverty Reduction Strategy Paper (PRSP) process – the latter instituted by the World Bank and the International Monetary Fund in 1999 as the basis for debt forgiveness and new concessional lending – are emerging as the primary instrument in many countries for development planning, resource allocation and aid co-ordination (see Chapter 1). National poverty reduction strategies are intended to address the larger national factors that cause poverty and to lay out a

coherent set of poverty reduction policies and measures to generate 'pro-poor growth' – integrating macroeconomic, structural, sectoral, and social considerations. For more than 70 of the poorest countries, the PRSP process will constitute the primary strategic and implementation vehicle for achieving the MDGs.[17] Given their increasingly central role in national priority-setting and planning, poverty reduction strategies provide a critical entry point for placing biodiversity-poverty issues at the centre of the national development agenda (see Case Study 1).

Although PRSPs are intended to reflect poor people's priorities, issues that matter most to the poor, including poverty-environment links, have often received inadequate attention or been overlooked entirely in the diagnosis of poverty and its causes, and in poverty reduction planning and policy development. Recent reviews of PRSPs prepared

Box 9.3: The Poverty and Environment Initiative

The Poverty and Environment Initiative (PEI) is a global programme co-ordinated by the United Nations Development Programme, supported by the UK Department for International Development and the European Commission. PEI aims to help countries develop their capacity to integrate the environmental concerns of poor and vulnerable groups into national policy frameworks and planning processes for poverty reduction and achievement of the MDGs. Country poverty-environment initiatives are being supported that focus on the following broad areas of activity:

- **Participatory poverty-environment analysis and capacity assessment** to strengthen institutional capacity in analysis of micro-level poverty-environment linkages and lessons from effective community-level interventions, and assessment of macro-level policy and institutional influences – applying principles and methods from the sustainable livelihoods approach, participatory poverty and vulnerability assessment, strategic environmental assessment and other relevant diagnostic and participatory tools.

- **Multi-stakeholder dialogue and policy development** to stimulate debate, consensus and coalition-building around a country-owned policy reform and capacity development agenda for mainstreaming environment in poverty reduction policy and planning processes – including poverty reduction strategies, macro and sectoral policies and plans, and budgetary frameworks.

- **Indicators and monitoring** to develop appropriate poverty-environment indicators for measuring how environmental conditions impact the livelihoods, health and vulnerability of the poor, and to strengthen capacity in monitoring and assessing poverty-environment policy outcomes as part of ongoing efforts to improve national poverty monitoring systems.

- **Sector co-ordination and partnerships** to strengthen institutional capacity to improve aid coordination and to facilitate a more cross-sectoral, programmatic approach to poverty and environment issues and their integration in development policy and planning frameworks.

17. United Nations Development Group (2003). *Country Reporting on the Millennium Development Goals: Second Guidance Note*. United Nations, New York.

in about 50 countries found that some (including Bolivia, Honduras, Mozambique, Nicaragua, and Uganda) made a significant effort to address key environmental management issues with strong links to poverty reduction.[18] However, most of these integration efforts are focused largely on water and sanitation to the exclusion of other environmental management issues and often are undertaken on an ad hoc basis without being continuously integrated in the PRSP cycle and national development planning processes.[19] Most PRSPs still lack a focus on long-term environmental sustainability and a major effort is needed adequately to reflect the role of biodiversity in ensuring sustainable poverty reduction.[20]

Most PRSPs still lack a focus on long-term environmental sustainability and a major effort is needed adequately to reflect the role of biodiversity in ensuring sustainable poverty reduction

The international community is mobilising to help countries meet the challenge of linking poverty reduction and environmental management. Many development co-operation agencies have put in place new strategies and support programmes focused on mainstreaming environment into poverty reduction efforts (see Box 9.3 and Case Study 1). Major international NGOs and research centres also are giving greater priority to these issues. UNDP, the UK Department for International Development (DFID), the European Commission and the World Bank have led the formation of the Poverty-Environment Partnership (PEP), an informal network of bilateral and multilateral development agencies that aims to promote joint policy work on poverty-environment issues, improve co-ordination and effectiveness of country-level support, and enhance knowledge-sharing. These developments at the national and international level provide a pivotal opportunity to forge more effective partnerships to support and scale-up successful local processes, and to move the poverty-environment agenda forward in a more integrated and focused manner.

18. Bojö, J., and R. C. Reddy. (2002). *Poverty Reduction Strategies: A Review of 40 Interim and Full PRSPs. Environment Department Paper. World Bank, Washington, D.C.*
19. Working Group on Poverty Reduction and Environmental Management *Tools for Assessment of Poverty-Environment Links in Poverty Reduction Strategy Papers (PRSP)* Working Paper, Danida, Copenhagen.
20. Bojö and Reddy (2002). *op.cit.*

3.2 Macroeconomic and sectoral policies and planning frameworks

Even where biodiversity-poverty links are adequately addressed in PRSPs, considerable work remains to ensure that Medium-Term Expenditure Frameworks and sectoral plans and budgets contain adequate and properly directed resources for investment in the environmental management concerns of the poor. For instance, agricultural development policies that convert forested or wetland areas to commercial monocultures may have a negative impact on poor people currently using these resources in their natural state as well as potentially degrading biodiversity and ecosystem services. All relevant sectoral policies need to be assessed to ensure that opportunities for biodiversity conservation to contribute poverty reduction have not been overlooked.

Within such cross-sectoral approaches, environment ministries and natural resource-related agencies will continue to play a significant role in policy-making and regulation. However, integrating biodiversity-poverty links in national-level development policies and programmes will require that institutions concerned primarily with the environment and biodiversity, including private organisations in civil society, will need to engage more effectively with finance ministries and other agencies driving the national development planning process. In most cases, a shift in orientation toward greater emphasis on biodiversity-poverty linkages will require a reassessment of environmental management mandates and capacity development needs.

Improved governance – including an active civil society and open, transparent, and accountable policy and decision-making processes – is often the missing link in creating a more enabling policy and institutional environment to address poverty-environment issues that matter to the poor

3.3 Decentralisation for local natural resource management

Improved governance – including an active civil society and open, transparent, and accountable policy and decision-making processes – is often the missing link in creating a more enabling policy and institutional environment to address poverty-environment issues that matter to the poor. Addressing governance issues is vital because the state directly controls access to many natural resources or

determines the rules for resource use, controls investment in environmental infrastructure, and creates the framework for public policy debate about poverty-environment issues.

One key aspect of governance reform is the trend toward greater decentralisation. In many countries, planning is increasingly being undertaken at provincial, district, and local levels. For example, countries such as Egypt, Malawi, Sri Lanka, and Tanzania have introduced district-level environmental planning. It is crucial that these environmental plans are integrated into mainstream local planning processes. It is also important that these plans address the issues that are priorities for poor people and do so from their perspective.

However, decentralisation and local empowerment do not guarantee environmental stewardship. Local governments can be subject to the same 'capture' by wealthy elites as central governments, and their environmental management capacity is often weaker than in central government. Decentralisation has also been undermined when central governments have not provided sufficient resources or revenue-raising powers for local governments to implement their responsibilities. Efforts to empower communities to manage natural resources locally should safeguard against capture by elite groups and build local capacity for participatory management.

Efforts to empower communities to manage natural resources locally should safeguard against capture by elite groups and build local capacity for participatory management

A second important factor in governance reform is empowering civil society, especially poor and marginalised groups. Farmers groups, community groups, religious organisations, trade unions, professional associations, and public interest organisations can be instrumental in raising awareness of poverty-environment linkages, helping poor people secure access to natural resources and environmental infrastructure, and in monitoring the performance and accountability of the government, private sector, and international agencies.

Strengthening civil society's role in environmental management, particularly among poor and marginalised

groups, requires access to environmental information, to decision-making processes, and to adequate means of redress through the justice system. Public access to information is critical for effective environmental management, and a free media has been instrumental in highlighting environmental problems in both the public and private sectors.[21]

The participation of poor and marginalised groups in policy and planning processes is essential to ensuring that key poverty-environmental linkages are adequately addressed. The participatory mechanisms put in place should be sensitive to the resource constraints of poor people, should increase their access to environmental information, and should enhance transparency and accountability in order to convince poor people that their views will be considered and given due weight in decision-making.

Poor and marginalised groups often lack access to environmental justice and redress of environmental abuses. Mechanisms such as citizen oversight boards, community-level review processes for development plans and projects, and ombudsman systems for dispute resolution can help monitor actions and enforce rights. It is also important to strengthen judicial systems in developing countries as independent, impartial institutions and to foster the emergence of institutions of civil society that can mediate between different actors.

Poor and marginalised groups often lack access to environmental justice and redress of environmental abuses. Mechanisms such as citizen oversight boards, community-level review processes for development plans and projects, and ombudsman systems for dispute resolution can help monitor actions and enforce rights

3.4 Strengthening monitoring, evaluation, and learning

It has been said, 'What gets measured, matters.' Achieving progress toward MDG 7 on environmental sustainability entails examining human welfare, ecosystem health, and the relationships between them. However, environmental sustainability is a concept that is not easily quantified, as it is holistic, complex, and value-laden. In this context, encouraging development that benefits both biodiversity and poverty reduction goals will require local understanding

21. Petkova, E., C. Maurer, N. Henninger, and F. Irwin (2002). *Closing the Gap: Information, Participation, and Justice in Decision-Making for the Environment*. World Resources Institute, Washington, DC.

of biodiversity-poverty links as well as the ability to identify and set priorities among alternative policy options and to evaluate their impacts. To this end, appropriate and effective indicators and monitoring systems are crucially important.

One obstacle to the development of such indicators and monitoring systems is the tendency for environmental data to focus on environmental change without reference to poverty effects, while poverty monitoring systems often ignore environmental concerns. Indicators are needed that measure and track how biodiversity and ecosystem services interact to affect the livelihoods, health, and vulnerability of the poor, as well as integration of these indicators into national poverty monitoring and assessment.

Some work is underway to develop such indicators, but the key need is additional in-country data collection. Surveys in various developing countries[22] show that some data are already available. However, these data are often scattered among different agencies and not collected systematically. Work is also being undertaken to overlay poverty data with environmental data to create 'poverty-environment maps' that identify the spatial relationships between poverty and ecosystem degradation.[23]

Country reports of progress toward achieving the MDGs reveal the challenge of monitoring the existing indicators associated with environmental sustainability (MDG 7). Embedding monitoring efforts for MDG 7 in national development programmes and/or poverty monitoring systems would help increase recognition of the linkages between biodiversity conservation and poverty reduction.

Encouraging development that benefits both biodiversity and poverty reduction goals will require local understanding of biodiversity-poverty links as well as the ability to identify and set priorities among alternative policy options and to evaluate their impacts. To this end, appropriate and effective indicators and monitoring systems are crucially important

4. LOOKING TOWARD THE 2005 MDG +5 REVIEW

This chapter has argued for more effectively integrating biodiversity conservation and poverty reduction strategies

22. For example see: Nunan, F. *et al.* (2002). *Poverty and the Environment: Measuring the Links. A Study of Poverty-Environment Indicators with Case Studies from Nepal, Nicaragua and Uganda.* Environment Policy Department, Issue Paper No. 2. Department for International Development, London. Osuntogun, A. (2002). *Applied Poverty-Environment Indicators: The Case of Nigeria.* Report submitted to the Environment Department, World Bank, Abuja.
23. Henninger, N. and M. Snel (2002). *Where are the Poor? Experiences with the Development and Use of Poverty Maps.* World Resources Institute, Washington, DC.

within mainstream development policy and planning processes in order to achieve the MDGs. Given the multi-dimensional nature of biodiversity-poverty links, this entails a broad agenda for policy and institutional change across many sectors and levels of action.

Among the most important of these actions are to:

- Identify local win-win solutions – such as ecoagriculture, new markets for biodiversity-friendly products, and innovative financing mechanisms such as direct payments to farmers for maintaining ecosystem services – that simultaneously protect biodiversity and maintain critical ecosystem services while also reducing poverty;
- Strengthen global strategies and frameworks so that they adequately support country-led mechanisms to take advantage of such win-win solutions and to scale-up successful local-level processes;
- Assist developing countries in their efforts to set, measure, and achieve country-specific MDG targets linking environmental sustainability and poverty reduction;
- Encourage linkages between, and harmonisation of, environmental targets, indicators and interventions developed within country-led MDG processes with mainstream national development frameworks and strategies, especially national poverty reduction strategies and the PRSP process;
- Engage with line ministries, including finance ministries and other agencies overseeing mainstream development planning, to address barriers to integrating environmental sustainability into national development and poverty reduction frameworks, strategies, and programmes;
- Create a more enabling policy and institutional environment for mainstreaming of biodiversity-poverty links through improved governance, including an expanded role for civil society in environmental management;

It is vital to encourage linkages between, and harmonisation of, environmental targets, indicators and interventions developed within country-led MDG processes with mainstream national development frameworks and strategies, especially national poverty reduction strategies and the PRSP process

- Reform trade-distorting policies that undermine the livelihoods of developing-country farmers, and build the capacity of poor farmers in developing countries to meet trade-related environmental standards that stimulate demand for biodiversity-friendly products commanding premium prices in world markets.

The UN MDG +5 Review that will take place in 2005 provides a major opportunity to mobilise greater international support and to forge more effective partnerships for moving the poverty-environment agenda forward in a more integrated and focused manner than in the past.

Case Study 5

Scaling-up Success in the Baimaxuseshan Nature Reserve, China[1]

In the rugged mountains of China's Yunnan Province, the Baimaxueshan Nature Reserve has recently been expanded. As a result, a large number of Deqin County residents now find their homes within its boundaries and have had severe restrictions placed on their traditional livelihood strategies of agriculture, livestock rearing, hunting and foraging for food. This experience is not unique to Deqin County. Due to the Chinese government's growing commitment since the early 1980s to protecting biodiversity and upper watersheds, the conflict between protected areas and local people's welfare has been growing. An official from the State Forestry Administration estimated in 1997 that 30 million poor people were living in and around China's nature reserves.

In order to improve conditions for the people living in and around the Reserve and reduce conflicts with the existing conservation policies, WWF-China began working locally with selected communities within the Nature Reserve in an effort to develop alternative livelihood strategies and reduce the degree of conflict with Reserve authorities. Interventions included provision of micro-credit, improved crop technologies, re-establishing local regulations on resource management and other efforts to lesson their dependence on forests. There were positive results, but this effort was resourceintensive, and difficult for WWF to scale-up to cover larger numbers of people.

WWF's Macroeconomics Program Office (MPO) reviewed the situation in Baimaxueshan as a part of its Economic Change, Poverty and Environment (ECPE)

1. Case study supplied by Dawn Montanye, WWF Macroeconomics Program Office, Washington DC and Tri Agung Rooswiadjie and Klaas jan Tuele, WWF-Indonesia

project, and carried out an analysis of the local poverty-environment dynamics and their links to meso and national policies. This showed that selected policy reforms could facilitate the use of existing resources to achieve a win-win for conservation and poverty reduction in the Reserve. Emphasis was placed on working both with local communities and with the Reserve authorities to explore co-management options that would both improve management of the Reserve and generate economic benefits for local residents.

One of the impacts of the work in Baimaxueshan has been greater receptivity by policy makers at both provincial and national levels to the integration of poverty reduction and conservation. A national Poverty and Environment workshop was recently convened by WWF and hosted by the State Development and Reform Committee. The Government of China has provided a clear mandate for setting up community co-management in Baimaxueshan and in other nature reserves. The challenge now is how to establish an equitable benefit-sharing system which supports sustainable natural resource management, minimum legal preconditions required for co-management, and the decentralization it demands. Connecting local action with policies and institutions at the provincial and national levels, has opened up the possibility of vertical scaling up of benefits and much greater sustainability of efforts as compared with WWF-China's independent efforts at the local level.

Achieving success in this vertically-integrated strategy relied heavily upon improving understanding and dialogue opportunities among all related stakeholders. Effective capacity building at all levels and collective advocacy was aimed at all levels including local communities, Nature Reserve staff, county-level government officials, provincial-level environmental protection and poverty alleviation agencies and experts, and national-level long-term planning bodies, such as the State Development and Reform Committee.

Although progress has been made, particularly at local levels of government within the Reserve, the gains made in pilot programmes such as this are fragile without continued legislative and representative support from higher levels of government. WWF China is currently building on its established reputation to facilitate a continuing dialogue on co-management of nature reserves, both amongst Chinese practitioners and between China and international organisations. This dialogue process is currently focusing on lobbying national legislation that recognises community rights.

Endword

Camilla Toulmin, IIED; Achim Steiner, IUCN;
Claude Martin, WWF; & Mark Rose, FFI

Understanding the umbilical cord that ties us to the planet earth, we are determined to do everything possible to save the earth from ourselves, to save the earth for ourselves, to ensure that as it took millions of years for humanity to evolve and emerge, so must humanity survive and develop for millions more years on the basis of a healthy partnership between people and the planet, on the basis of a sustainable relationship between a prosperous world and a healthy environment.[1]

The chapters in this book have demonstrated how biodiversity lies at the heart of human well-being, and is particularly critical for the livelihoods, health and risks faced by poor communities. The authors show the importance of local processes in achieving the MDGs and in bridging the conservation-development divide. Practical examples illustrate the challenges of building capacity, at local and national levels, better to deliver on these twin goals. But much remains to be done to bring about a closer integration of conservation and development, without which improvements in neither can hope to succeed.

1. Thabo Mbeki, 'Address of the President of the Republic of South Africa Thabo Mbeki, at the Welcome Ceremony of the World Summit on Sustainable Development, Johannesburg 25 August 2002'.

The MDGs have set for us all an ambitious global framework within which to identify priorities, and establish linkages between different objectives. While the commitment to halving the number of people suffering acute poverty is admirable, the focus of aid agencies on a restrictive understanding of the MDGs can present certain difficulties, especially when some of the most important underlying causes and key principles to achieving the MDGs are not explicitly stated. These include the importance of democratic processes and systems of governance that draw upon diverse interests and groups. As well, we must avoid the temptation to work only in those areas of the MDGs where progress might come most easily. Amongst the MDGs, the objectives to improve supplies of water, and access to health and education have been easier for governments to focus on, than more abstract conceptions. For example, the incredibly complex issues surrounding biodiversity conservation have been put to one side by many agencies, as not being central to their main concerns. As this volume makes clear, nothing could be further from the truth. Sustainable management of land, natural resources and biodiversity remain central to the day-to-day maintenance of livelihoods of most poor people. Such a realisation is only gradually starting to permeate the design of poverty reduction strategies (PRS) and associated processes and must be increasingly recognised if significant headway is to be made in either conservation or poverty reduction. This is not only one of the central themes of this book, but one of the most important calls to action of our times.

The PRS process tends to be best at rolling out provision of government services, rather than identifying the many ways in which agriculture, natural resources and biodiversity management might best be supported to deliver benefits for incomes, equity, and health. Given that most governments and donor agencies have adopted the PRS as the framework within which to channel resources, currently and in the foreseeable future, we need to find ways of flagging up environmental concerns more

effectively, and translating objectives into activities that governments can recognize as familiar. All too often, the response to environment has been to draw up another plan, whether for biodiversity, desertification, or sustainable development, without these having any anchorage within ongoing activities.

The mid-term review of the MDGs, to take place in 2005, will show us where serious progress has been made, but also how far we still are from fulfilling commitments. This occasion will provide a valuable opportunity for us to question our attitudes, approaches, mechanisms and levels of commitment. Given the avalanche of good intentions, associated initiatives, plans and processes, this global review should also prompt us to ask why such a big gap remains between intentions and practice, between knowledge of a problem and the development and implementation of creative solutions. Thus, it is our hope that we can move together towards a clearer understanding of how decisions are actually made, and how to overcome remaining obstacles to the productive integration of poverty reduction and conservation aims.

As with measures to stem climate change, the conservation of biological diversity is of huge global significance. Both issues exhibit an uneven balance of costs and benefits, uncertainty and a need for strategic behaviour, as well as short- and long-term time frames for action and associated returns. For these and other reasons, reliance on market measures alone - in a world that fails to place a value on biodiversity and ecological services - cannot achieve our shared objectives. We need to mobilise the general public, and our political processes, to recognise the urgency of action today - not in a decade's time. Indeed, with both our climate mechanisms and reserves of biodiversity, further delay in protecting these systems today will generate greater hurdles, more intractable problems, and greater vulnerability tomorrow. The global community no longer has the luxury of viewing biodiversity loss as a problem of the future. Like sustainable development, the

call to conserve the world's biodiversity must be transformed from a theoretical challenge to a slogan that rouses people from their armchairs and gets them marching in the streets! Even as we say this, however, 'the environment' has lost ground in development agencies to other newer topics. We could do with the creativity of an advertising agency to craft new terms to inspire the popular imagination with the scale of the challenge we face.

Conservation and development seemed to have achieved a happy marriage in the 1980s and 90s. Conservation formed a central part of the sustainable development agenda and initiatives such as community-based natural resource management (CBNRM) and community-based conservation fitted with the trend development practice towards participation, benefit-sharing, and decentralisation. Conservation was a part of the project portfolios of many donor agencies and, for a while, both interest groups appeared to find enough common ground. Things changed, however, in the late 1990s with donors switching focus to poverty reduction as their prime objective, rather than sustainable development. This shift brought with it a decline in environment and conservation activities, and a move from projects to government budgetary support. The latter has led to a decrease in support to locally driven initiatives, and generated several counter-productive trends.

Meeting the MDGs (particularly across those targets and in those countries that are currently falling behind) is going to require thinking outside the box and concerted support from all sectors with the potential to influence conservation outcomes. Both conservation and development agencies need to re-think preconceived ideas and critically examine their roles and contributions, and their interactions with other key stakeholders such as the private sector, civil society and indigenous groups.

Biodiversity can make major direct contributions to MDG achievement: such as health (Chapter 2) and income

opportunities (Chapters 4and 7). It can also greatly enhance capacity to deal with risks, such as climate change: "As biodiversity is lost, options for change are diminished and human society becomes more vulnerable" (Chapter 3). However, maximising the potential of these opportunities requires a range of interventions. Conservation of biodiversity needs to be integrated with natural resource use in ways that satisfy human needs. Land and natural resources need to be managed in a coordinated manner such that strictly protected areas thrive alongside agricultural lands. The ecosystem approach will have to increasingly be applied to ensure that landscapes, people and resources are managed to the long-term benefit of all stakeholders. "The ecosystem approach [as advocated by the CBD] recognises that ecosystems must be managed as a whole, with protected areas serving as reservoirs of wild biodiversity in a matrix of land that is managed to enhance its habitat value, while also providing a range of benefits to people, from food supply and income to ecosystem services, building on these opportunities". This implies "decentralisation of management to the lowest level appropriate; equitable distribution of benefits; use of adaptive management policies that can deal with uncertainties and are modified in the light of experience and changing conditions; and a multi-disciplinary approach that takes into account environmental, social, and economic issues" (Chapter 6). As well, ecoagriculture (agriculture that conserves biodiversity), and other sustainable approaches to resource use and management will allow us to combine conservation with efforts to increase agricultural productivity.

Institutions also matter! Structures at different levels provide the space to manage trade-offs between different interests and priorities. Trade-offs need to be recognised and negotiated between local and global priorities, and between conservation and development objectives. The power imbalance between different stakeholders - particularly international and local players – must be

acknowledged and handled and mechanisms developed to overcome their unequal resources. The capacity of local people to engage in decision-making needs to be strengthened through firmer attribution of rights and responsibilities to local-level structures. Care is needed to strengthen institutions that can represent different interests and groups in ways that are accountable. Of particular significance in the context of biodiversity conservation and sustainable use is the need to recognise the rights of indigenous peoples and to ensure their effective and informed participation in decision-making. None of this happens in an instant, but takes years to build up. Local initiatives that successfully link conservation and development need to be scaled up if they are to have an impact on national and international poverty reduction goals. This implies additional resources for those initiatives that show promise - specifically those that engage multiple communities and include external partners such as government, the private sector and NGOs.

Market-based approaches to conservation and sustainable use, while generating economic benefits from conservation may often not benefit the poor - particularly small-holders or those without secure land or resource rights, and those who do not know how to access such new initiatives. The impacts of such schemes are context specific and depend on local power relations. Promoting markets for environmental services, such as watershed management and carbon sequestration, as well as conservation of biological diversity, can provide powerful incentives for change - but care is needed to maximize their potential for poverty reduction and to avoid all the gains being appropriated by the better-off.

The role of non-traditional stakeholders in conserving biodiversity and generating sustainable livelihoods needs greater attention. In particular, we need more reflection on the impacts that the private sector - from big businesses to SMEs - can have on biodiversity conservation. Can we be more creative in terms of generating new markets? How

best to combine different pressure points - consumer preferences, corporate accountability, regulation and legal constraint? The linking of biodiversity to business risk and opportunity by some investors has created an incentive for key sectors to reexamine their impacts on biodiversity and develop initiatives to address them. However, until such time as the full costs of 'using' biodiversity are factored into business models, as is beginning to happen with climate change and the development of emissions trading schemes, the incentives will remain weak for the development of long-term strategies to minimise biodiversity impacts.

Most of all we face the problem of only partial recognition by public and private actors of our collective dependence on biological diversity in all its glorious forms. As a result we have not been able to reverse the widespread ignorance of how and why our health and basic existence rely on multiple and diverse systems in which millions of creatures form a part. As a result, such diversity is being destroyed by a range of interests which seek far more immediate and personal benefits.

This volume has presented some of the challenges that the conservation and development communities will face over the short and long term as we work together to secure a more sustainable future for our planet. It has also highlighted that the visions of these two communities are not at odds, but rather are complementary and mutually supportive. We must ensure that the divisions that once separated our work are brought down and that we are able to move forward together effectively – following the model of local people throughout the world who address environmental and poverty challenges holistically. Now more than ever before, we are called upon to think outside the box and ensure that our combined efforts yield much greater impact than working alone. Not only do the MDGs require this, but communities and the future of our natural environment demand it of us.

We, as Directors of conservation and development organisations recognise the many challenges this book raises. While we may not be able to address them all individually, at the very least they provoke our thinking and we look forward to engaging further in the debate.

The Millennium Development Goals and Conservation – Managing Nature's Wealth for Society's Health

The Millennium Development Goals (MDGs) commit the international community to an expanded vision of poverty reduction and pro-poor growth, one that vigorously places human development at the centre of social and economic progress in all countries. Conservation has an important role to play in delivering on this commitment, given the location of much of the world's biodiversity in some of the poorest countries and the particular dependence of poor people on natural resources. Despite this linkage there remains much division between conservation and development communities. The challenge is firstly to resolve the environment versus development dichotomy and secondly, to find practical ways and means to attain direly needed economic development but importantly not at the expense of environmental sustainability. By identifying practical ways forward and capacity building requirements, we hope this booklet goes some way to addressing this challenge.

IIED has launched a programme of collaborative research, networking and advocacy on the MDGs. Meeting these ambitious goals requires more local action, local capacity and good governance. We aim to identify policies and practices that enhance these local development processes. We also aim to challenge inadequate and inaccurate measures of poverty and development progress and increase the influence of civil society on key debates and high-level policy processes. For more information about IIED's work on the MDGs, go to http://www.meeting themdgs.org

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This booklet is the second in a series of three, and was produced to coincide with the IUCN World Conservation Congress in November 2004 which has, as its theme, People and Nature, Only One World. The booklet has been produced in partnership with a number of leading conservation and development organisations:

◆ The **Equator Initiative** is a UNDP partnership programme that promotes, and advocates for, community and grassroots efforts to reduce poverty through the conservation and sustainable use of biodiversity.

◆ **Fauna & Flora International** (FFI), founded in 1903, is the world's longest established international conservation body. FFI acts to conserve threatened species and ecosystems worldwide, choosing solutions that are sustainable, based on sound science, compatible with human needs and delivered through local partnerships.

◆ **IUCN – The World Conservation Union** brings together states, government agencies and a diverse range of non-governmental organisations in a unique world partnership. IUCN seeks 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.

◆ **UNDP Capacity 2015** aims to develop the capacities needed by developing countries and countries in transition to meet their sustainable development goals under Agenda 21 and the Millennium Development Goals (MDGs) at the local level.

◆ **UNDP Poverty and Environment Initiative** is a global programme that aims to help countries strengthen their own capacities to integrate the environmental priorities of poor and vulnerable groups into national policy and planning processes for poverty eradication and sustainable development.

◆ **WWF** is one of the world's largest and most experienced independent conservation organisations, with almost 5 million supporters and a global network active in 90 countries.

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