

THE
**ARGUMENTS
FOR PROTECTION**
SERIES

SafetyNet

Protected areas and
poverty reduction

A research report by WWF and Equilibrium

Arguments for Protection

Safety Net Protected areas and poverty reduction

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Foreword

Welcome to the fourth in our *Arguments for Protection* series: WWF's ongoing analysis of the wider environmental and social roles of protected areas.

This in-depth report on the links between protected areas and poverty reduction comes just at the right time. 2008 is the year that the Convention on Biological Diversity has identified as a deadline for establishing: "*mechanisms for the equitable sharing of both costs and benefits arising from the establishment and management of protected areas*" in its timetable for the *Programme of Work on Protected Areas*. The IUCN World Conservation Congress at the end of the year will have a major focus on the links between conservation and social programmes, including particularly how conservation can contribute to poverty reduction strategies. And WWF's new programme is committed to looking specifically at how its long-term conservation projects can partner more effectively with suitable social and development programmes.

None of these commitments is easy to meet. Poverty has proved to be one of the most intractable problems facing humankind and research has shown time and again that the impacts of environmental deterioration usually hit hardest at the poorest members of society. In the following report, we do not discount the problems, but we also collect together many heartening examples where well planned and managed protected areas have helped to bring new wealth and security into under-privileged societies.

Our research shows clearly that these benefits are only likely to be equitably distributed in situations where good governance is in place. This makes it essential for conservation organisations that are serious about their social responsibilities to work together with many partners, including governments, to ensure that protection of environment and biodiversity can take place in conditions where poverty reduction policies have a chance of delivering real benefits. We include a series of important recommendations for next steps, both for ourselves and more generally.

The *Arguments for Protection* series aims to increase support for biodiversity protection, focused in particular on the priority ecoregions where WWF concentrates its work. Previous titles have looked at the links between protected areas and drinking water, religious faiths and conservation of agricultural diversity and volumes currently in preparation cover disaster mitigation and human health. Future work will be helped by a new tool, the Protected Areas Benefits Assessment Tool, prepared to develop the case studies in the current volume and also being published as a stand-alone methodology.

Most protected area managers and agencies recognise that if they are to be effective, they need to show that the tenth or more of the world's land surface already devoted to protected areas has the widest possible set of benefits for the greatest number of people. We hope that the present volume will help them to make the case.



James P. Leape
Director General
WWF International

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The material and geographical designations in this report do not imply the expression of any opinion whatsoever on the part of WWF concerning the legal status of any country, territory or area, or concerning the delimitation of its frontiers or boundaries.

The authors and editors are responsible for the content of this report. Their opinions do not necessarily represent the views of WWF.

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Summary

Today protected areas are increasingly expected to deliver social and economic benefits in addition to conserving biodiversity. Assurances that protected areas will provide such benefits are often crucial to attracting the support needed for their creation. But delivering on these promises is seldom easy. In some cases this may mean broadening the scope of benefits delivered by protected areas without undermining what they were set up for in the first place, no simple task. Unless we understand and publicise the full range of benefits from protected areas we risk not only reducing the chances of new protected areas being created but even of seeing some existing protected areas being degazetted and their values lost.

This report, the fourth volume in WWF's *Arguments for Protection* series, looks at the role of protected areas in poverty reduction, in its widest sense. We focus mainly on the poorest countries and on poor communities within those countries. A few examples look at regional development and some also compare the impacts of protected areas in the materially richer countries. Specifically the report seeks to review five linked questions:

- ✓ What is the range of benefits that protected areas can offer?
- ✓ How do these benefits link to poverty reduction strategies?
- ✓ What is the evidence, if any, of protected areas reducing poverty and increasing well-being?
- ✓ What are the prerequisites for protected areas to contribute to poverty reduction?
- ✓ How do the benefits reach the poorest people, if at all?



Rattan (*Calamus* spp.), a sustainable resource from the buffer zone of Kerinci Seblat National Park. Sumatra, Indonesia

© WWF-Canon / Martin Harvey

Efforts to align protected areas and poverty reduction have continued for some time and have a mixed history; while some social programmes associated with protected areas have worked well there have also been plenty of failures. Meanwhile the political pressure to show that conservation and poverty reduction can co-exist is growing and some governments are questioning commitments to protection in the face of present economic or social pressures. As investors seek more guarantees or predictability of joint socio-economic and conservation success, implementing agencies are – rightly – being held more accountable for results.

The concept of 'protected area' is defined and different management approaches and governance types are described. Protected areas usually have to compete with other demands on land or water. Changing political expectations mean that many stakeholders expect to have a say about whether a protected area is created or not and designation often depends on a complex process of negotiation, trade offs and agreements.

To support claims that protected areas can reduce poverty, it is important to have clear definitions of what we mean by 'poverty', 'poverty reduction' and 'well-being'. We review many different definitions, including those from the World Bank, UK Department for International Development (DFID), World Health Organisation, Organisation for Economic Co-operation and Development (OECD) and World Summit on Sustainable Development. For the purposes of this report, based on definitions from the OECD and DFID, we recognise five fundamental dimensions of well-being, any improvement in which should contribute to reducing poverty:

- ✓ *Subsistence*: non-economic benefits that contribute to well-being, i.e. health, nutrition, clean water and shelter
- ✓ *Economic*: benefits which provide the ability to earn an income, to consume and to have assets
- ✓ *Cultural and spiritual*: pride in community, confidence, living culture, spiritual freedom, education
- ✓ *Environmental services*: role in environmental stability and provision of natural resources
- ✓ *Political*: relating to issues of governance and thus influence in decision-making processes

The different types of relationship between local people and protected areas are described, ranging from ‘win-win’ to ‘lose-lose’. We consider whether protected areas can help to reduce poverty, first from the rather narrow perspective of poverty as defined by the World Bank and applied within the Millennium Development Goals (less than one dollar a day) by assessing the economic benefits of protected areas, then by looking at wider definitions of poverty as defined above. The sometimes chequered history of protected areas and local communities is considered as well, looking at poverty reduction in particular. A collection of short examples of economic benefits from protected areas are given in table form.

We distinguish between direct and compensatory benefits from protected areas: i.e. benefits that arise because of the intrinsic values of the protected area itself and those that come because governments or others introduce compensation packages for people displaced by or losing resources to protected areas. The different types of values and benefits which protected area can provide in theory and practice (which is not necessarily the same thing) are also described in turn: food and drink, cultural and spiritual values, health and recreation, knowledge, environmental benefits, materials and homeland.

Next we use data from work by WWF and others on management effectiveness of protected areas. WWF has carried out over 400 assessments of protected areas, using a simple questionnaire-type tracking tool, and has also assessed over 40 national protected area systems with another rapid assessment system. Both can be used to identify a group of protected areas where managers believe protection has also resulted in better conditions for local communities. WWF is also a major sponsor of a global study of management effectiveness in protected areas coordinated by the University of Queensland, which is assessing several thousand assessments. The combination of these data gives us two things: the largest body of statistical information on management effectiveness of protected areas available to date and a means of identifying a range of protected areas worth looking at in more detail. In addition, we developed our own simple assessment tool, the *Protected Area Benefits Assessment Tool*, and have used this to help to draw together information for this report and for a series of case studies. Case studies, which look at the issues discussed in the report in greater detail, come from Argentina, Finland, Malaysia, Mongolia, Nepal, Poland and Tanzania.

Analysis and conclusions discussed, note that:

- ✓ *There is an evolution of approaches to integrating the needs of people and nature in protected areas, from ‘no linkage’ to ‘direct linkages’*
- ✓ *Lessons learnt from Integrated Conservation and Development Projects (ICDPs) and from the Global Environment Facility (GEF) suggest that ‘win-win’ solutions are difficult and that trade offs may be necessary*
- ✓ *Monitoring is critical for effective conservation and development projects and it is important to be clear about what is being measured*
- ✓ *Good examples of effective protected area management combined with poverty reduction strategies need to be studied and replicated*
- ✓ *If poverty is understood as a multi-dimensional state rather than just a question of income, then protected areas have more chances of contributing to poverty reduction*
- ✓ *Not only is the generation of benefits important, but their distribution is also key*
- ✓ *Each situation is unique*
- ✓ *Periods of transition when people are moving in and out of poverty are particularly sensitive*
- ✓ *Protected areas are frequently not integrated with other sectors*

- ✓ *Protected areas should be viewed as elements of overall landscapes*
- ✓ *Land ownership/management agreements play a fundamental role*
- ✓ *The challenges involved in achieving a balance between conservation and poverty reduction must be acknowledged and managed*

Finally the report suggests a series of recommendations; both in general terms and aimed at specific stakeholders.

This is not a detailed global study of the benefits of protected areas but nor is it a random selection of examples; we have attempted to provide a balanced overview of what is happening around the world and of what appears to work and what does not. The subject is fashionable and there are already a mass of reports, books and papers in circulation – why add to the pile? Despite reading some excellent contributions to this theme (which are summarised in a literature review in Appendix 1 of this volume), we still found a general lack of clarity on issues relating to poverty reduction and protected areas. In particular some of the (fairly harsh) criticism levelled at protection strategies has not been responded to in detail. The same small group of examples have been cited repeatedly and have occasionally lost some of their authority in the process. Those charged with the job of bringing a conservation message to a wider audience are still asking for clear examples of benefits. Indeed, the fact that protected areas are rarely, if ever, embedded in national economic or development strategies suggests that a firm case has yet to be made outside the environmental realm.

While we are still keenly aware of the limitations of what follows, we hope that it does offer something new. Like most works on this theme, our report is exploratory. Although we answer some questions, we have discovered others that still need to be addressed. In this tricky and controversial subject we very much welcome your comments and feedback.

The WWF *Arguments for Protection* project aims to identify, and where possible quantify, the wide range of benefits derived from protected areas, to increase support for protection, broaden and strengthen protected area management strategies, to reach new audiences and to raise awareness about the importance of protected areas. Previous volumes have looked at drinking water, agrobiodiversity, faiths and religions, and the role of protected areas in disaster mitigation.

Chapter 1: Introduction

“Nature is a basis for fighting poverty. The poorer the people, the more they need nature’s capital for overcoming poverty.”
Klaus Toepfer, UNEP¹

Over the last decade, the challenge of reducing levels of global poverty has rocketed up in the priorities of politicians, development organisations and the media, so that it now commands a dominant position among humanitarian aims for the new millennium. With good cause: despite the optimism of economists in the 1980s and 1990s, differences between the rich and the poor have in some respects continued to increase. In September 2006 the General Assembly of the United Nations was informed that extreme poverty has ‘actually deepened’². As of now, around a billion people are estimated to live in ‘extreme poverty’³, commonly defined as living on less than one US dollar a day¹, primarily but not exclusively in tropical countries. Although the percentage of people living in extreme poverty has declined markedly over the past twenty years in Asia, population increases mean that this region still has the largest number of extremely poor people⁴. Extreme poverty has stayed approximately stable in Latin America but has increased considerably in both sub-Saharan Africa (currently 44 per cent⁵, a virtual doubling since 1981⁶) and in Central and Eastern Europe. On a worldwide scale, more than twice this many people, almost half the global population, have to make do on less than two dollars a day⁷: the access to money and spending power we take for granted in the materially rich countries remains a dream for most of the world’s population.



75 per cent of ethnic minority people in Vietnam live below the poverty line

© WWF-Canon / Elizabeth Kemf

The international community is recognising the reality and scale of this problem. The first of the eight *Millennium Development Goals* set by the United Nations is to “eradicate extreme hunger and poverty”, with a 2015 target of halving the proportion of people living on less than a dollar a day and halving the number who suffer from hunger⁸. Governments, development groups, religious groups, actors, rock stars and activists have put their weight behind the campaign. Donor organisations have switched their budgets around to prioritise poverty reduction over anything else, taking the strategic decision that until some of the most basic inequalities are addressed, there is little point in trying to solve other problems. The UK government was representative of many other rich nations when it stated its new position in 1997: “*We shall...refocus our international development efforts on the elimination of poverty and encouragement of economic growth which benefits the poor...*”⁹.

However, at the same time we face an unprecedented loss of biodiversity. In the last 50 years humans have transformed the planet more radically than at any other point in history. Extinction rates are thought to be a thousand times higher than natural rates¹⁰. As we lose and degrade entire ecosystems it is much more than wildlife that we are losing: the benefits that ecosystems and species provide to humanity are being lost as well. Vital goods and services such as pure drinking water, fertile soils on which to grow food and medicinal plants all come from a healthy environment. Without these we are all poorer; as the Millennium Ecosystem Assessment

¹ Although this common measure is increasingly criticised as discussed in Chapter 3

states: “*The degradation of ecosystem services is harming many of the world’s poorest people and is sometimes the principal factor causing poverty*”¹¹. In the face of this dramatic decline in life supporting systems, we cannot afford to wait. Rapid habitat loss and pressure on natural resources are both threatening species with extinction now, rather than in fifty years’ time. The need to respond to climate change is an urgent priority today, which should not be set aside until we get other problems sorted out. Failure to act now will close off options that will not be available in the future.

While virtually all the statements by donors and decision-makers acknowledge the need to achieve poverty reduction in the context of sensible environmental policies, the small print tends to get ignored when money is allocated and many donor organisations have shifted the focus of their support dramatically over a short period of time. It is hard to argue with the need to focus on inequality when faced with the massive discrepancies between the haves and the have-nots. But there is a problem of timing or sequencing, because many pressing conservation issues cannot easily wait until poverty is ‘eradicated’, if indeed such a goal is attainable under current economic and political conditions. Moreover, the role that biodiversity can play in poverty reduction is not well understood and therefore often either over- or under-estimated. A survey of protected area managers at the Vth World Parks Congress in 2003 found that 78 per cent believed that economic benefits of protected benefits were significant to the broader community¹². As stores of environmental assets, protected areas can potentially play an enormous role in reducing poverty levels. But exactly how this is done, to what extent it can be done and under what conditions, remains to be adequately researched and documented.

Many have attempted to do so. Efforts to address the new priorities have resulted in a plethora of studies, reviews and publications seeking to demonstrate the links between environmental care and poverty reduction. We review some of these in Chapter 4 and Appendix 1. They are of variable quality, ranging from simplistic to thoughtful and from optimistic to pessimistic. A few ‘successful’ examples of conservation projects that also deliver poverty-reduction benefits are quoted time and again; not all of these are quite as perfect as their proponents claim.

The change in development aid has created immediate strategic problems for conservation organisations and incidentally for many development organisations as well. During the 1980s and 1990s close working relationships built up between many conservation organisations, development groups and donor agencies. In the years when donor countries focused a lot of their attention on environmental issues, they worked closely with and often funded the work of conservation NGOs, particularly those based in Europe. Changing priorities at the turn of the century upset this hitherto rather cosy relationship, with development staff suddenly faced with orders to justify all their projects in terms of poverty reduction, and conservation organisations struggling to find reasons why their own projects could meet this new and over-riding criterion. It is fair to say that conservation professionals were frequently wrong-footed and forced into the unfamiliar position of having to follow someone else’s agenda.

The constraints imposed by the new development regime have been made even more acute by the mounting criticism of some conservation organisations from human rights groups. A growing number of the latter argue that local peoples’ rights have been trampled on or ignored in many conservation activities, perhaps most of all in the creation of protected areas such as national parks and wildlife reserves. Groups such as the World Rainforest Movement and Forest Peoples’ Programme have assembled a depressing list of examples of protected areas established through the forcible relocation of resident communities and the subsequent problems that these people, often amongst the poorest in the society, have faced¹³. Some of their criticisms are difficult to refute. As a result, conservation professionals have experienced something of a reversal over a decade, from being regarded by many as ‘heroes’ for saving wildlife to being increasingly seen in some quarters as ‘villains’ for their treatment of some of their own species.

It is clear that in the future protected area establishment will by necessity be a more inclusive and thus altogether more complex procedure: the conditions agreed to in the Convention on Biological Diversity’s (CBD)

Programme of Work on Protected Areas and the CBD's overall target to “achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on earth” already make this clear¹⁴. The results are generally positive; bringing conservation initiatives more fully into the mainstream and addressing what have clearly been inequalities in the past. But the transition phase is proving a challenge.

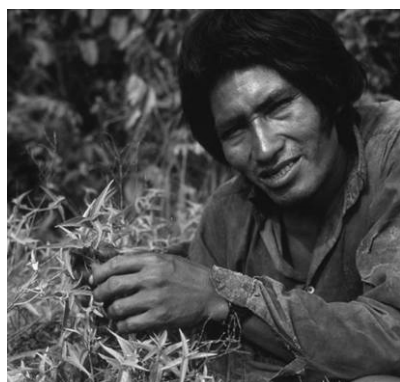
Conservation organisations are still struggling to address this change: by incorporating development concerns into their conservation work (not always very well), by partnering with development organisations or sometimes just by keeping their heads down and carrying on as before.

The result is, at the moment, unclear expectations and much room for unfounded claims, both in favour of the poverty reduction potential of protected areas and against them. There is however, clearly a growing and quite genuine effort to address the poverty issue within the conservation field, by learning from past mistakes and combining social and environmental issues more effectively: a new generation of conservation professionals are emerging who have grown up with an understanding of the necessity of supporting social and environmental development simultaneously. Almost a third of protected area professionals who responded to the World Parks Congress survey mentioned above, identified training relating to sustainable development as an important priority¹⁵.

Such a change is also likely to be supported by the people who ultimately pay the bills for NGOs. Although there are exceptions, most people interested in wildlife and the environment are interested in people as well; supporters of conservation NGOs are also likely to be making donations to social charities and would like to see the two issues being tackled in a harmonious manner. The problems today are not primarily due to ideological differences but to misunderstandings, inexperience, time pressures and the very complexity of what we are trying to achieve.

Not everyone takes this perspective. There is concern that the current focus on poverty is simply a response to pressure from funding agencies and will fade away as political priorities change. Some conservationists are questioning whether the whole poverty emphasis is not just window dressing, while development agencies are complaining that promises made about delivering development in project proposals from conservation NGOs are not being fulfilled. The dissenters also argue that conservation interests have been singled out and asked to provide subsidiary benefits in a way that many other fields – for instance industry, health care and the arts – have not. A recent paper in *Nature* warned that too much emphasis on promoting ecosystem services and market based conservation is a risky strategy, because if these do not prove to be as important as we hope, then we have lost the justification for protection, and argued instead for a return to protection of nature for nature's sake¹⁶.

The whole *Argument for Protection* series, of which this report is one volume, is based on the premise that to maintain and where necessary expand the protected area network we need to demonstrate its wider uses and appeal. But to some extent we agree with the sceptics here; a claim that saving a particular rare species is *necessarily* going to help the economic growth of a country is simplistic and reliant on huge assumptions about the potential of ecotourism or the genetic value of wild biodiversity. We risk making claims that we cannot meet.



A Huachipaeri Indian points out *Wayaanchi* leaves which bring luck and solve family problems, Manu National Park, Peru

© WWF-Canon / André Bärtschi

However, we will also be arguing that although the new pressures on us have sometimes been uncomfortable, the benefits often outweigh the costs. The philosophy and practice of modern conservation, which has been slowly emerging over the last fifty years or so, is characterised by a steadily increasing depth and complexity: from sites to ecoregions; species in danger to biodiversity; preservation of key sites to landscape approaches with multiple management; top down to stakeholder driven. Conservation is also increasingly looking beyond protected areas to the management of whole ecosystems. A recent statement from conservation organisations about freshwater biodiversity started by stating an interest in the: “*entire freshwater biome at the largest scale through wise use and conservation*”¹⁷. At such scales, humans and other species need to learn to co-exist, which means that conditions for both must be favourable.

Like most other people, conservationists generally only move into new and difficult areas of work if we are pushed – and we can now consider ourselves to have been pushed very firmly towards the poverty and social rights agendas. Protected areas are now one of the largest land uses on the planet and our very success means that the expectations on us are growing all the time. How effectively we manage to meet these will determine to a large extent whether the enormous increase in land and water under protection remains in perpetuity or if much of it is gradually degraded and, in time, de-gazetted.

Chapter 2: What are protected areas and why do we need them?

Protected areas arise through recognition of the benefits provided by natural ecosystems, or in some cases long-established manipulated ecosystems, which cannot be replicated in intensively managed landscapes. Human societies have been protecting areas of land and water from long before the start of recorded history – to protect grazing pasture (for example the *hima* system in much of the Middle East¹⁸), maintain timber supplies, stop avalanches or landslides¹⁹, provide game for hunting²⁰, or to allow secure places for fish to breed. People have also protected land and water for less tangible reasons: because places were considered sacred or simply because they were recognised as aesthetically beautiful and worthy of preservation.



The boundary between the protected forest and agricultural field of Mount Meru, Tanzania

© Sue Stolton

The modern concept of a ‘protected area’ – known variously as national park, wilderness area, game reserve etc – developed in the last years of the nineteenth century as a response to the rapid changes brought to lands in former European colonies and concern at the loss of ‘wilderness’. Here protection was sometimes already driven by a desire to stop species disappearing, as is the case with some of the colonially-established parks in India, but also because the colonisers were trying to retain remnants of the original landscape. They often incorrectly assumed this to be in an untouched state, although in most cases ecology had already been influenced by human activity for millennia. A handful of national parks in Africa, Asia and North America heralded a flood of protection that spread to Europe and Latin America and gathered momentum throughout the twentieth century, and the number of protected areas continues to increase in the 21st century. Most of today’s protected areas have been officially gazetted in the last fifty years – many even more recently – and the science and practice of management are both still at a relatively early stage.

The term ‘protected area’ embraces a wealth of landscapes and seascapes, ranging from huge, virtually untouched areas to tiny culturally-defined patches; and from areas so fragile that no-one is allowed entrance to living landscapes containing settled human communities. Although there are a growing number of protected areas, near or within urban areas, the majority are in rural areas and thus rural areas are the focus of this report. Early efforts at protection often centred on preserving particularly impressive landscapes, such as Yosemite National Park or the Grand Canyon in the USA. More recently, recognition of the rapid loss of plant and animal species has switched the emphasis of protection towards maintenance of species and ecosystems, and increasing efforts are made to identify new protected areas specifically to fill ‘gaps’ in national conservation policies so that as many species as possible have viable populations maintained in protected areas²¹.

Protected areas and species conservation

The earth is currently facing a major ‘extinction crisis’. Although species change naturally over time, with new species emerging and old ones gradually evolving or slipping into extinction, human actions have caused a rapid acceleration in the loss of species, ecosystems and genetic diversity. Many of these extinctions are to species that have never even been described by science – thought to be the large majority of the world’s diversity and including particularly invertebrates, lower plants and aquatic species – but many larger and better known plants and animals are also declining at alarming rates.

The CBD – the United Nations body charged with protection of the earth's natural abundance of wild species and genetic richness – estimates that the current extinction rate is 100-200 times higher than the naturally expected level, with the greatest losses on islands and in freshwaters²². The United Nations Environment Programme also identifies forest species as being particularly at risk²³. The Millennium Ecosystem Assessment, a comprehensive review to assess the impacts of ecosystem change on humanity initiated in 2000, is even more pessimistic and believes that extinction rates may be up to a thousand times expected levels. Drawing on the IUCN Red Data List, which charts threats to species around the world, it is estimated that 12 per cent of bird species and 23 per cent of mammals are threatened with extinction. Just as significant, studies suggest that almost *all* species are currently declining in either range and/or population size²⁴.

The earliest protected areas were generally imposed on the original inhabitants by the colonial powers, in much the same way that the rest of the land and water was divided up, and communities were often forcibly relocated from land that had in some cases been their traditional homelands for centuries. The practice of ‘top-down’ decision-making about protection carried on in many newly independent states in the tropics. Today, efforts by human rights lobbyists and leadership from the CBD is gradually resulting in greater democratic controls on selection and agreement of protected areas, although the net costs and benefits are often still not evenly distributed.

What protected areas provide

Protected areas are the cornerstones of almost all national and international conservation strategies. They act as refuges for species and ecological processes that cannot survive in intensely managed landscapes and seascapes. They also provide space for natural evolution and future ecological restoration, for example by maintaining species until management outside parks is modified to allow their existence in the wider landscape or seascape. Although protected areas are today often created primarily to protect biodiversity, people also draw many practical benefits, for example from the genetic potential of wild species, the environmental services of natural ecosystems, the recreational opportunities provided by wilderness areas and the sanctuary that such areas can provide to traditional and vulnerable societies, including many indigenous peoples. Many protected areas also contain sites that are sacred to one or more faith group; indeed the sacredness has often contributed to the fact that an area retains its ecological values²⁵. More generally, ‘ecological treasures’ are increasingly being accorded similar values within national identities as culturally valuable sites, so that flagship protected areas create the same kind of feelings as, say, a famous temple or a work of art.

Protected areas are increasingly expected to fulfil multiple functions with biodiversity conservation no longer the sole ‘output’, creating additional challenges for managers but also increasing the beneficiaries and therefore also the support for such places.

Defining protected areas

Although most large protected areas are managed by governments on state-owned land, this is by no means the only model and protected areas are evolving rapidly in terms of both management aims and governance systems.

IUCN - The World Conservation Union defines a protected area as: “*An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means*”²⁶. In other words, protected areas are set up primarily for the protection of biodiversity but may also have a range of other important social, cultural and economic valuesⁱⁱ. Protected areas exist under literally dozens of different names, with common ones including *national parks*, *nature reserves* and *wilderness areas*. They also exhibit a wide variety of different management regimes, ranging from strictly “no-go” areas that are effectively kept free of any human presence, to large

ⁱⁱ It should be noted that this is a best compromise definition. Some indigenous peoples, for instance, think that it distinguishes too sharply between biodiversity and culture.

landscapes or seascapes where biodiversity protection takes place alongside traditional management and frequently also permanent human communities. To provide some structure, IUCN has agreed a set of six management categories for protected areas, based on management objectives²⁷. Like all artificial definitions the categories are imprecise and the boundaries between them sometimes blurred, but they provide a succinct overview of the multiplicity of protected area types. The six are outlined below.

- ✓ *Category Ia: managed mainly for science or wilderness protection* – an area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring.
- ✓ *Category Ib: managed mainly for wilderness protection* – large area of unmodified or slightly modified land and/or sea, retaining its natural characteristics and influence, without permanent or significant habitation, which is protected and managed to preserve its natural condition.
- ✓ *Category II: managed mainly for ecosystem protection and recreation* – natural area of land and/or sea designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.
- ✓ *Category III: managed mainly for conservation of specific natural features* – area containing specific natural or natural/cultural feature(s) of outstanding or unique value because of their inherent rarity, representativeness or aesthetic qualities or cultural significance.
- ✓ *Category IV: managed mainly for conservation through management intervention* – area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats to meet the requirements of particular species.
- ✓ *Category V: managed mainly for landscape/seascape conservation or recreation* – area of land, with coast or sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the area's protection, maintenance and evolution.
- ✓ *Category VI: managed mainly for the sustainable use of natural resources* – area containing predominantly unmodified natural systems, managed to ensure long-term protection and maintenance of biological diversity, while also providing a sustainable flow of natural products and services to meet community needs.

This means that protected areas can vary dramatically with respect to management regimes. It would be fair to say that the precise boundaries of what can or cannot fall inside a protected area are still being actively debated. In addition, many older protected areas, which originally excluded people, have relaxed their rules in the face of protests from local communities and others, or because managers recognised that these restrictions were not always necessary.



Laughing Bird Caye
National Park, Belize

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B. Rath

For example Bwindi Impenetrable Forest Reserve in Uganda now allows local people to gather non timber forest products in designated areas, which are switched over time to ensure that their crop is sustainable. Nyika National Park in Malawi once again permits local communities access to four traditional sacred sites for rain dance ceremonies. Keoladeo National Park in Rajasthan, India, allows grazing on its wetlands, and so on. The precise balance between use and protection, the various trade offs and the long-term maintenance of a park's values are seldom fixed at the time of the first management plan but rather evolve over a period of years. It is also an extremely sensitive subject, with some NGOs reacting strongly against attempts to open up protected areas and others arguing conversely against protection on human rights grounds.



Bwindi Impenetrable Forest
National Park, Uganda

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J. Weyerhaeuser

Protected areas are not the only places valuable for biodiversity. Official government lists of protected areas do not usually include all the land and water that is maintained in a way that is likely to be beneficial to wildlife or the environment. In some countries there is also a large amount of land and water that is quite effectively 'protected' without being part of any official protected area. These can include areas managed traditionally by local communities for multiple values (usually grouped together under the name 'community conserved areas' and sacred groves) or sites important to faith communities, but also lands set aside for military reasons, as strategic timber supplies, to protect drinking water supplies or as lands for indigenous communities. Such sites provide a 'shadow network' of places where the habitats and species are often very carefully protected: sometimes more effectively than in the specially designated nature reserves. The long-term security of such sites is highly variable and in many cases there are currently debates about if and how they should be recognised within protected area systems.

At present, many protected areas are owned and managed by national governments, but this is far from inevitable, and a number of different governance types are recognised by IUCN²⁸, covering a variety of private and community ownership patterns, as outlined in table 1 below.

Table 1: Different governance types in protected areas

Government-managed protected areas	Federal or national ministry or agency in charge
	Local / municipal ministry or agency in charge
	Government-delegated management (e.g. to an NGO)
Co-managed protected areas	Transboundary management
	Collaborative management (various forms of pluralist influence)
	Joint management (pluralist management board)
Community-conserved areas	Declared and run by indigenous peoples
	Declared and run by local communities
Private protected areas	Declared and run by individual land-owner
	Declared and run by non-profit organisation (e.g. NGO, university or cooperative)
	Declared and run by for-profit organisation (e.g. individual or corporate landowners)

When these governance types are combined with the IUCN categories, they create a matrix of different possibilities for the ways in which protected areas can be managed or governed as outlined below.

Table 2: The interaction between management objectives and governance types in protected areas²⁹

Classification of protected areas by IUCN category and governance type											
Governance type	A. Protected areas managed by the government			B. Co-managed protected areas			C. Private protected areas			D. Community conserved areas	
IUCN category (management objective)	Federal or national ministry or agency in charge	Local / municipal ministry or agency in charge	Government-delegated management (e.g. to an NGO)	Transboundary management	Collaborative management (various forms of pluralist influence)	Joint management (pluralist management board)	Declared and run by individual landowner	...by non-profit organisations (e.g. NGOs, universities, co-operatives)	... by for profit organisations (e.g. individual or corporate land - owners)	Declared and run by indigenous peoples	Declared and run by local communities
I: Strict nature reserve or wilderness area											
II: Ecosystem conservation and protection											
III: Natural monument											
IV: Conservation through active management											
V: Landscape / seascape conservation & recreation											
VI: Sustainable use of natural resources											

The continuing need for new protected areas

When the last global survey of protected areas was completed by the UNEP World Conservation Monitoring Centre in 2003, over 100,000 designated protected areas were recorded in virtually every country, along with an uncounted number of smaller reserves and refuges³⁰. Most are terrestrial and protected areas now cover over 10 per cent of the world's land surface. Their establishment represents what is almost certainly the largest and fastest conscious change of land use in history. There are also around 1,300 marine protected areas, mainly in coastal regions, but this covers less than one per cent of the oceans and a huge growth in marine reserves is predicted, including in the politically-challenging high seas areas where no one country has sovereignty. Rapidly declining fish stocks are adding impetus to calls for marine protection.

Setting aside a tenth of the planet's land surface for the protection of natural biological diversity already represents an extraordinary global recognition of the importance of wild nature. However, these statistics give a false impression of the strength of the world's protected area network. Many existing protected areas are remote, inaccessible or on land that is of little economic value – ice caps, deserts and mountains – and not in the places with the highest levels of biodiversity. There are notable gaps remaining in terms of habitats and ecosystems that have not been protected³¹. More generally, both freshwater and marine systems are poorly protected with for instance less than one per cent of lake systems in protected areas. Furthermore, a worryingly large number of protected areas exist in name only, or are poorly managed so that the values they are supposed to be protecting can continue to disappear³². Isolated protected areas are also at risk even if they remain intact, unless they are extremely large, and species within them continue to decline³³.

From the perspective of the current report, this means that many of the remaining ‘gaps’ in national protected area networks are likely to be in the most difficult places from the perspective of protection – valuable areas such as lowland forest, grasslands and in the heavily modified cultural ecosystems of some of the world’s great agricultural areas. Setting aside land in such conditions is not a simple matter; much will be in private ownership and powerful economic forces will be asking why they should be expected to forgo benefits in the name of conservation. Protected areas in these places are often required to provide a suite of benefits that extend well beyond traditional conservation concerns.

In response to recognition of such gaps and to continuing concern about the rate of biodiversity loss, in February 2004 188 signatories to the CBD committed to expanding the world’s protected area network, aiming to develop and maintain, “*comprehensive, effectively managed and ecologically representative systems of protected areas*” by 2010 on land and by 2012 in marine areas³⁴. The accompanying *Programme of Work on Protected Areas* contains over 90 specific, time-limited actions for governments. Although these lay stress on the biological importance of protected areas they also recognise socio-cultural values and the importance of involving local communities in selection and designation of sites for protection. The CBD also demands prior informed consent from local communities before future protected areas are established on land or water that they have traditionally lived on or used.

Underlying this call for completion of protected area systems is recognition that choices about where to protect should not be random, but based on increasingly sophisticated selection tools that aim to include as many species and ecosystems as possible within the area protected, in sufficient numbers that the populations remain stable over time. ‘Ecologically representative’ therefore, refers to the need for protected areas to sample the full variety of biodiversity of different biological realms (freshwater, marine and terrestrial) and biological scales (species and ecosystems)³⁵. The methodology of planning and locating protected areas in the ‘best’ places has developed rapidly over the past two decades. Broadly speaking, approaches can be divided between those that rely on experts, usually collaborating in workshops³⁶ (although ‘expert’ is now usually recognised as also including knowledgeable local people alongside those traditionally trained in science) and those that rely on data, increasingly linked to specialised software tools³⁷.



Masai people
Amboseli National
Park Kenya

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Mauri Rautkari

Trading off between protection and development

In a crowded world with many competing needs, protected areas almost always have to compete with other demands on land or water: indeed if there are no other competing demands then probably a protected area is hardly needed. Currently, the rapid rate of change taking place, particularly in many tropical countries, increases the need to act fast to secure strong protected area networks. A recent study found 140 ecoregions where natural ecosystems were being converted at least ten times more quickly than they were being protected³⁸, and several studies have also shown a correlation between a country’s economic inequality and biodiversity loss³⁹.

Changing global social conditions mean that many different stakeholders will expect to have a say about whether a protected area is created or not and designation will often depend on a complex process of negotiation, trade offs and agreements. The science of selection is usually heavily influenced by the politics of what is possible or

acceptable. It means making choices about the location, size and management objectives of protected areas that take into account other needs within the landscape or seascape. The art of protected area design is as much about balancing biodiversity and human needs, and finding the points of overlap, as it is about the strict science of assessment and planning. Effective protected area networks will increasingly only work if other benefits are recognised and support for protection is gained as a result. This may be uncomfortable for some within the conservation movement, but it is the reality that protected area planners and managers are working with in many parts of the world and this trend is likely to continue.

The same process is increasingly true with respect to management objectives and governance types in new or existing protected areas. The best choices for biodiversity often have to be balanced and traded off with competing demands. Choice of management objectives (and associated IUCN category) and choice of who manages are both often key steps in gaining acceptance of protection; but balancing human needs with those of biodiversity often involves difficult trade offs.

Finally it is worth noting that the report, and the accompanying series, are looking specifically at values of *protected areas*, but in reality there are a number of other management approaches that can on occasion produce similar social and environmental results, including some forms of community-based forest management, community conserved areas outside official protected area networks, some sacred natural sites and natural or semi-natural areas managed through traditional approaches. Whether these are likely to be ‘better’ or ‘worse’ than protected areas in terms of either their role in conservation or their impact on livelihoods would be worth investigating but is beyond the scope of the current study.

Chapter 3: Changing definitions of poverty

“Poverty must be addressed in all its dimensions, not income alone”

UNDP, *Human Development Report*, 1997

Our understanding of what constitutes poverty has evolved over time. For many years, with economists in the lead, it was assumed that if a nation's GDP grew, poverty levels would naturally drop⁴⁰. Income, consumption and production measures provided an attractive way of putting figures on poverty. While for comparison purposes and for simplicity, the poverty threshold of ‘one dollar a day’ retains its appeal, it is increasingly being replaced by multidimensional and more complex ways of defining and measuring poverty.

Poverty line versus absolute poverty

In order to define poverty, economists have traditionally referred to the minimum requirements needed to satisfy a person's daily needs. Anyone living below the minimum requirements would fall below the ‘poverty line’⁴¹. This line is relative, with daily needs acquiring different values in different parts of the world. Thus, different countries have different poverty lines, with richer countries having much higher poverty lines than poor ones, because it costs more to supply basic needs in the richer nations and also to some extent because expectations change. Calculating poverty lines is a complex process and it does not lend itself to easy comparisons between countries. For this reason, since 1990, the World Bank has opted for the lowest common denominator, i.e.: the ‘one dollar a day’ threshold, as an absolute measure of poverty. Once adjustments are made for purchasing power parity (PPP), this method allows straightforward comparisons between countries and between years⁴².

Poverty: The US\$1 per day measure

At a global level, the number of people in severe poverty using the US\$1/day threshold for absolute poverty had fallen from 40 per cent of the world's population in 1981 to 21 per cent by 2001. However, these global figures hide important regional disparities. If one excludes China from the calculations for the developing world, the number of people living under US\$1 per day **increased**, from 840 million to 890 million between 1981 and 2001. In Africa, the number of people living in severe poverty practically doubled during the same period, from 164 million to 316 million. Indeed, the share of the world's poor in Africa has risen from 11 per cent in 1981 to 29 per cent in 2001⁴³.

In addition, between 1981 and 2001 the number of people living between US\$1 and US\$2 has actually risen sharply, from about 1 billion to 1.6 billion⁴⁴. These people may have overcome one ‘threshold’ but clearly remain extremely vulnerable.

The ‘one dollar a day’ measure provides a simple way of gauging poverty levels and remains a common indicator of poverty. It has however, been heavily criticised as much too simplistic to understand the full nature of poverty. For instance, it does not consider the fact that in many countries essential needs are met by subsidising key products (e.g. bread in Egypt). Nor does it consider distributional factors (within country but also within households). More worryingly, if the understanding of poverty is limited to income (or, as the case may be, consumption) of less than one dollar a day, then the implication is that pushing this figure above one dollar solves the poverty problem. Thus, definitions of poverty become important not only for measuring poverty progression or regression, but also for selecting appropriate responses and policies⁴⁵.

In the 1980s and 1990s broader definitions of poverty began to appear, equating being poor to a lack of choice or options (UNDP) or to deprivation (Amartya Sen)⁴⁶. While income poverty was the standard applied until the 1990s, by the end of the decade ‘human poverty’ (introduced by UNDP in 1997⁴⁷) covering malnutrition, illiteracy, poor maternal health and disease became more pervasive as a means of measuring poverty⁴⁸.

Equally while ‘capital’ was understood until then as signifying financial capital, a broader understanding emerged in the late 1990s to include such things as human capital and natural capital⁴⁹. In 1998, the Nobel prize for economics was awarded to Amartya Sen who made strides in the understanding of poverty and welfare, and who stated that: *“Policy debates have indeed been distorted by overemphasis on income poverty and income inequality, to the neglect of deprivation that relates to other variables, such as unemployment, ill health, lack of education, and social exclusion”*⁵⁰.

Just as definitions of poverty began to expand in their complexity, so did the language and actions relating to poverty reduction strategies. Thus the concept of ‘pro-poor’ growth also emerged in the late 1990s to look at issues beyond economic growth such as social policies, by promoting such tools as micro-enterprise development and agroforestry⁵¹. However, UNDP noted in its 2000 report⁵² that even pro-poor growth often does not reach the poorest unless governance issues are resolved. It thus referred to governance as the ‘missing link’ between poverty reduction and pro-poor growth.



Cooking on a wood stove in Rajasthan, India

© WWF-Canon / Martin Harvey

The new millennium

The turn of the century created new opportunities and challenges for poverty reduction. The new millennium provided renewed impetus among global leaders for tackling poverty. It was a time when decision-makers around the world were taking stock and reflecting on the state of the world. The then head of UNDP, Mark Malloch Brown, reflected that too many small projects were being undertaken in isolation, without a concerted and integrated effort⁵³. He noted that without a more strategic, multi-disciplinary and comprehensive approach to tackling poverty, we would continue to see limited progress in poverty reduction.

In 2000, world leaders gathered in New York at the UN Millennium Summit and agreed that efforts to date had not been satisfactory. One hundred and eighty nine nations committed to renewed efforts to improve the lives of people on the planet by the year 2015. The eight ‘Millennium Development Goals’ (MDGs) embody this commitment⁵⁴. The relatively straightforward targets cover the different dimensions of human development, including: income poverty, education, gender equity, progress in combating infectious disease, environmental quality and access to clean water and sanitation. The first MDG for instance, falls under the umbrella ‘Eradicate extreme poverty and hunger’ and has a two-pronged target that aims to: *“Reduce by half the proportion of people living on less than a dollar a day”* and *“Reduce by half the proportion of people who suffer from hunger”*⁵⁵.

Evolving definitions and frameworks for poverty

While in narrow terms poverty is related to income, what does income signify if other essential pre-conditions of well-being such as education, health and freedom are not met? Over the last decade or so, evolving concepts of poverty brought in a multitude of new dimensions, including: self organisation⁵⁶, vulnerability⁵⁷, deprivation⁵⁸, lack of access to basic resources⁵⁹, lifespan⁶⁰, freedom⁶¹ etc. Today the World Bank notes: *“Poverty is hunger. Poverty is lack of shelter. Poverty is being sick and not being able to see a doctor. Poverty is not having access to school and not knowing how to read. Poverty is not having a job, is fear for the future, living one day at a time. Poverty is losing a child to illness brought about by unclean water. Poverty is powerlessness, lack of representation and freedom”*⁶².

These many different facets of poverty make it all the more difficult to measure and track. Chambers⁶³ notes that the definition of poverty depends on “*who asks the question, how it is understood, and who responds*”. Indeed what poverty represents to someone in Scandinavia is very different to what it means to someone in Bangladesh. Poor people are themselves not a homogeneous group. Thus, in many societies because of inequitable distribution of resources and wealth, different groups (e.g. ethnic minorities or women) may be poorer than others.

The essence of poverty can possibly best be summarised as being a lack of opportunity or an inability to achieve one’s potential. It has been suggested that in fact, rather than one ‘poverty’ there is a multitude of ‘poverties’⁶⁴. The concept of well-being has also made its appearance in the literature, generally closely assimilated to poverty reduction. UNEP suggests that: “*there is widespread agreement that well-being and poverty are the two extremes of a multi-dimensional continuum.*”⁶⁵

A flurry of new definitions, frameworks and conceptual models has emerged to try to unravel the dimensions of poverty. These definitions of poverty were all proposed by those far-removed from it. In order to obtain the view of those directly affected, in 1999 the World Bank undertook a comprehensive study called *Voices of the Poor*⁶⁶ targeting 60,000 people across 60 countries to collect their expressions of poverty. Such factors as access to land, protein malnutrition and joblessness were all raised by the poor surveyed⁶⁷.

One approach to the assessment of poverty which has retained its appeal is the Sustainable Livelihoods Approach (SLA), promoted by the UK Department for International Development (DFID)⁶⁸. It places the individual at the centre of development and identifies a number of factors or ‘capitals’ that are available to improve their development. These are:

- ✓ *Human capital* – which represents the skills, knowledge, ability to work and good health that together enable people to pursue different livelihood strategies
- ✓ *Social/political capital* – which are the social resources which people draw upon including networks, memberships and various relationships that support everyday life
- ✓ *Physical capital* – which includes the basic infrastructure needed to support livelihoods such as transport, shelter, energy etc.
- ✓ *Natural capital* – which refers to the stock of natural resources
- ✓ *Financial capital* – which refers to the financial resources that people use to achieve livelihood objectives

Along similar lines, the OECD⁶⁹ suggested a framework that provides a well-balanced approach solidly grounded in the three pillars of sustainable development. It highlights human, environmental and economic dimensions divided under five categories:

- ✓ *Economic* – which covers income, livelihoods, decent work
- ✓ *Human* – which includes health and education
- ✓ *Political* – which includes empowerment, rights, voice
- ✓ *Socio-cultural* – which includes status and dignity
- ✓ *Protective* – which covers insecurity, risk and vulnerability

The World Health Organization (WHO) also expressed concerns about our understanding of poverty and the consequent approach to its reduction. In 1997, WHO promoted the following definition of poverty: *Poverty exists when individuals or groups are not able to satisfy their basic needs adequately*⁷⁰, with ‘basic needs’ being composed of:

- ✓ Food
- ✓ Social and cultural life
- ✓ Primary education
- ✓ Health
- ✓ Favourable living and environmental conditions (clothing, shelter, water, air, etc.)

UNEP⁷¹ goes even further and identifies ten basic constituents of well-being, i.e. being able to:

- ✓ be adequately nourished
- ✓ live in an environmentally clean and safe shelter
- ✓ be free from avoidable disease
- ✓ have adequate and clean drinking water
- ✓ have clean air
- ✓ have energy to keep warm and to cook
- ✓ use traditional medicine
- ✓ continue using natural elements found in ecosystems for traditional cultural and spiritual practices
- ✓ cope with extreme natural events including floods, tropical storms and landslides
- ✓ make sustainable management decisions that respect natural resources and enable the achievement of a sustainable income stream.

It recognises that the list is incomplete and that the final selection of constituents of well-being and their relevance must be determined by the communities or individuals concerned through participatory processes.

To date there is no single widely approved definition for poverty, except in fact for the simplistic one of US\$1/day; and the vast literature of proposed definitions continues to thrive with definitions ranging from the simplistic to the overly complex.

Making the environmental dimension explicit

Despite the environment being considered a fundamental element of poverty reduction since the 1972 Stockholm Conference, it is only in the 1990s that environment and conservation issues were really considered essential elements of poverty reduction. In 2000, while the World Bank recognised vulnerability⁷² to natural disasters as a key facet of poverty, it failed explicitly to recognise the contribution of good environmental stewardship. In 2005, UNDP and others squarely placed the environment as a key element in relieving poverty, noting that: “*The livelihoods of the poor can be enhanced by capturing greater value from ecosystems*”⁷³.

For the 2002 World Summit on Sustainable Development (WSSD), DFID, the European Commission, the World Bank and UNDP produced an inter-agency paper that emphasised three key dimensions of poverty related to environmental conditions:

- ✓ *Livelihoods* – poor people tend to be most dependent on the environment and the direct use of natural resources, and therefore are the most severely affected when the environment is degraded or their access to natural resources is otherwise limited or denied
- ✓ *Health* – poor people suffer most when water, land and the air is polluted
- ✓ *Vulnerability* – the poor are most often exposed to environmental hazards and environment-related conflict, and are least capable of coping when they occur.



School children in
Uganda

© Marc Hockings

Whether poverty is framed in financial terms or in broader terms, it is inextricably linked to the environment. Energy, for instance, is tapped from the environment forming an essential input for production that is as fundamental to the largest world economies as it is to the smallest rural households in developing countries. Equally, it is the same environment that can constrain poor people's development, for instance through dramatic events such as floods or storms that can wipe away people's livelihoods and increase the spread of water-borne diseases, and that impact whole countries' economies by affecting infrastructure and resulting in more people moving into poverty. Thus, our environment should figure at the forefront of any assessment of poverty.

For the purposes of this report, and based on both the OECD definition and the DFID/SLA, we interpret five fundamental dimensions of well-being:

- ✓ *Subsistence*: non-economic benefits that contribute to well-being, i.e. health, nutrition, clean water and shelter
- ✓ *Economic*: benefits which provide the ability to earn an income, to consume and to have assets
- ✓ *Cultural and spiritual*: pride in community, confidence, living culture, spiritual freedom, education
- ✓ *Environmental services*: role in environmental stability and provision of natural resources
- ✓ *Political*: relating to issues of governance and thus influence in decision-making processes

Thus, any improvement in these values should contribute to reducing poverty.

Chapter 4: A review of protected areas and poverty reduction

“Americans for example, believe that they earned their wealth all by themselves. They forget that they inherited a vast continent rich in natural resources....”

J D Sachs, *The End of Poverty: Economic Possibilities for our Time*⁷⁴

Introduction: protected areas, poverty reduction or both?

It is probably only since the 1972 Stockholm Conference on the Human Environment that there has been explicit recognition of the importance of natural assets to our human well-being⁷⁵. The Stockholm declaration notes for instance that: *“The protection and improvement of the human environment is a major issue which affects the well-being of peoples and economic development throughout the world...”*⁷⁶. Ever since then, the links between conservation and poverty have been a cause of much discussion; a debate which has intensified since the 1992 Rio Earth Summit⁷⁷.

With world leaders and development aid increasingly targeting poverty reduction, and the MDGs representing a renewed global effort to channel resources in the same direction to reduce world poverty, it is important to understand the role that natural resources and protected areas in particular may play in this global effort. Both the CBD in its ‘2010 Biodiversity target’ and later the WSSD have framed biodiversity conservation within the context of poverty reduction.



Wood fire cooking in a tourists' lodge,
Annapurna Conservation Area, Nepal

© WWF-Canon / Michel Gunther

Where do poverty and protected areas meet? Indeed, one could ask: why should they meet? Those concerned with protected areas have very clear biodiversity objectives and those concerned with poverty focus on improving poor people's livelihoods, traditionally through increasing their income. However, in reality there is significant geographical overlap between poor people and protected areas. Protected areas are often located in remote areas, where any rural inhabitant will also most likely be removed from a country's mainstream economy⁷⁸. Poor people and protected areas thus tend to be inevitably linked, and the form that this link takes is diverse and complex.

Many have accused poverty of contributing to environmental degradation. It was believed that because the poor had limited opportunities and short timeframes, they were more likely to overuse whatever natural resources they could access. Others have countered this argument noting that on the contrary, precisely because the poorer members of society have no other resources than natural ones, they are more likely to be better stewards of their resource base⁷⁹. Anil Markandya in his keynote speech at the IISD's conference on 'Poverty Alleviation and Sustainable Development' in 2001⁸⁰, noted that there is no evidence to suggest that poor people contribute to environmental degradation. Others have also questioned this link⁸¹. Some indigenous people themselves have argued that in fact the very reason conservationists and protectionists are interested in land that they have

traditionally managed for generations is precisely because they have done such a good job of protecting biodiversity⁸². Environmental governance has also been promoted as a solution to poverty. Indeed, some have emphasised that the MDGs cannot be met unless environmental considerations appear much more centrally in poverty reduction strategies⁸³. It has certainly proved difficult to disaggregate cause and effect: do protected areas increase or reduce poverty? Do poor people contribute to environmental degradation or rather to environmental management?

This report suggests that protected areas are neither an ultimate solution to poverty nor an ultimate cause. However, given both their importance as a store of 'environmental assets' and their proximity to poor and predominantly rural people they clearly do have an important influence and a potential role to play. We look first at the ways that protected areas and local people in mainly developing countries relate, at the role protected areas may have sometimes played in exacerbating poverty and at their real and potential roles in reducing povertyⁱⁱⁱ. We then explore the lessons learnt from experiences to date and identify the pre-requisites necessary for protected areas to contribute poverty reduction.

Analysing the linkages: how do protected areas and poor people interact?

Clearly, the relationship between poor, rural people's well-being and protected areas is complex. Trying to achieve common goals has provided the conservation and development communities with many challenges. Some have attempted to integrate poverty reduction strategies into protected areas projects, others have tried to include a conservation dimension to their rural poverty reduction programmes and others still have claimed to meet both poverty reduction and protected area goals in their work. Because of the generally qualitative nature of the evidence, it has been difficult to verify many of the so-called successful examples in an objective way. A detailed analysis of claims made in these three areas suggests that not only are there only limited empirical data but also that interpretations of poverty vary widely, adding to the difficulty in interpreting such claims⁸⁴.

In an attempt to analyse the links between people and protected areas, the Biodiversity Support Program and Center for International Forestry Research⁸⁵ explored the evolution of the relationship between poor people and protected areas and have proposed the following three types of relationships:

- ✓ **No linkage** – where protection is the primary aim and people are viewed as a threat. Historically, this approach to creating protected areas has been widely used. It can be assumed that many of the protected areas created before the 1980s had little or no linkage to people. There was a clear segregation between biodiversity priorities (met through protected area establishment) and poverty reduction (met through different forms of assistance, essentially donations and other financial aid). An area designated as biologically important was fenced off and in many cases anyone within its perimeter removed. For example, the Twa were removed to allow the establishment of the Kahuzi Biega National Park in the Democratic Republic of Congo and about 50,000 Maasai were removed for the establishment of the Serengeti National Park in Tanzania⁸⁶.
- ✓ **Indirect linkage** – where the socio-economic development of communities living around protected areas is being taken into account. Because of the perceived limitations of the 'no linkage' approach above, conservationists began to see the need to address people's needs. This was done primarily by providing economic substitutes (some form of compensation) to communities who were negatively affected by the establishment of protected areas. The integrated conservation and development programmes (ICDPs) that appeared in the 1990s could be classified under the 'indirect linkage' category, as can some of UNESCO's Man and Biosphere Reserves (MAB). ICDPs are site-based projects aiming to achieve both socio-economic and ecological goals.

ⁱⁱⁱ Note that although some of the examples relate to indigenous people, we do not make a particular study of indigenous communities in this report as links between indigenous peoples and protected areas will be the subject of a forthcoming volume of the arguments for protection series.



Fishing in the Rio Tinto Negro, Rio Platano Biosphere Reserve, North of Honduras

© WWF-Canon / Olga Sheean

For example in Honduras, in the Rio Platano Biosphere Reserve, an ICDP was set up to provide alternative income-generating activities to local communities in order to reduce the pressure they were putting on the core areas⁸⁷. In many cases, however ICDPs ended up merely compensating local people for loss of land to a protected area. In other cases they have attempted to support alternative income-generating activities in order to reduce pressures on protected areas. While in the 1990s there was enthusiastic support for this type of project from various development agencies, today most opinion concurs that their impact was limited⁸⁸. The ‘development’ aspect of these projects was generally an afterthought. This approach still lacked the full participation of communities, with resulting encroachment, poaching and illegal harvesting within protected areas.

- ✓ **Direct linkage** – where people’s livelihoods are recognised as being directly dependent on conservation. More recently, there has been an emergence of approaches aimed at truly integrating people’s needs early on in the process of protected area establishment and during management. Thus, it can be said that in the last five years or so efforts have begun to actively identify and promote direct linkages between people and protected areas. For example, the landmark creation of Colombia’s Alto Fragua-Indiwasi National Park was done with full participation of the Inga people who are recognised by the government and others as primary actors in the design and management of the park. This park and its rich biodiversity have been important for the Inga people for the past three centuries⁸⁹. Historically, the area where the park is located saw gatherings of wise men from the indigenous Amazon and Andean peoples to discuss the value of biodiversity and its relevance to the world⁹⁰. Frequently these approaches also imply a change in governance with a greater proportion of the control over management decisions given to affected communities.

Looking for ‘win-win’ solutions

The ‘direct linkage’ approach described above equates to the oft-mentioned but elusive ‘win-win’ solution. The term ‘win-win’ comes from game theory where it is used to refer to social interactions and behaviour. It has been applied widely, and rather loosely, across different contexts, including conservation where it often used to refer to the nature of the relationship between people and biodiversity. Thus, whilst the relationship between poverty and conservation is rarely a direct one of cause and effect⁹¹, in a simplistic form, we can identify at any one time winners and losers. The so-called ‘win-win’ relationship is in fact one of nine possible permutations: see table 3 below. Although stakeholders can be far removed from a protected area, in a first instance it is useful to do this analysis only for poor rural people immediately surrounding or within a protected area on the one hand, and biodiversity within the protected area on the other. Clearly this is reductionist and a more thorough assessment would need to include wider stakeholders and the landscape within which the protected area is situated as well as the wider network of protected areas it falls under. However, given the many claims to date about protected areas’ roles in poverty reduction (and poverty creation) a simple analysis to identify winners and losers and cause and effect can help to disentangle myth from reality. Table 3 below provides examples of different activities leading to different permutations of the ‘win-win’ relationship between poor people and biodiversity in protected areas.

Table 3: **Examples of the relationship between poverty reduction and biodiversity conservation in protected areas**

Activity		Impact on poor people (living in and around the protected area)	Impact on biodiversity (in the protected area)		Relationship between poor people and biodiversity conservation
Poor people are engaged as active managers of the protected area	→	Poor people are empowered	Biodiversity conservation is secured	→	Win - Win
Sustainable harvesting is allowed in the protected area	→	Poor people can meet their needs in non timber forest products (NTFPs) and other products	Biodiversity conservation is maintained (neither improved nor worsened)	→	Win - No change
Proper management plans are set up in the protected area, and capacity is in place to implement them	→	People's poverty levels remain the same	Biodiversity conservation is improved	→	No change - Win
Current situation is good enough that nothing worsens in the short term, but nothing improves	→	Status quo for people's poverty	Status quo for biodiversity conservation	→	No change - No change
Corruption leads to mis-management in a protected area, reducing available resources for poor people and threatening their livelihoods as well as biodiversity	→	People's poverty levels are worsened	Biodiversity conservation is worsened	→	Lose - Lose
Unsustainable harvesting from a protected area	→	In the short term poor people can obtain NTFPs etc	Biodiversity conservation is negatively affected	→	Win – Lose
Poor people are banned from accessing a site that used to be an important burial ground for them	→	Poor people's cultural and spiritual needs are worsened	The status of biodiversity conservation remains the same	→	Lose - No change
Strict management plans are in place that forbid anyone from entering the protected area, including traditional people who used to depend on this land	→	People's poverty levels are increased	Biodiversity conservation is improved	→	Lose - Win
Uncontrolled tourism activities in cave systems within a protected area.	→	People's poverty levels remain the same in the short term	Biodiversity conservation is threatened by degradation of the cave ecosystem (i.e. bat and invertebrates species).	→	No change - Lose

The relationship between people and biodiversity is never static. Over time for example, it may progress from a ‘lose-lose’ to a ‘win-win’ situation (see figure 1 for one example of how this could occur), or vice versa. Thus, any statement about the nature of this relationship will be ephemeral. Engaging poor people in management (our ‘win-win’ above, will only work if they receive real benefits from their engagement which is not always the case. At any given point in time the nature of the relationship will also be defined in relation to the previous status. For example, at point B in figure 1, the ‘win’ for people is in relation to the ‘lose’ at point A.

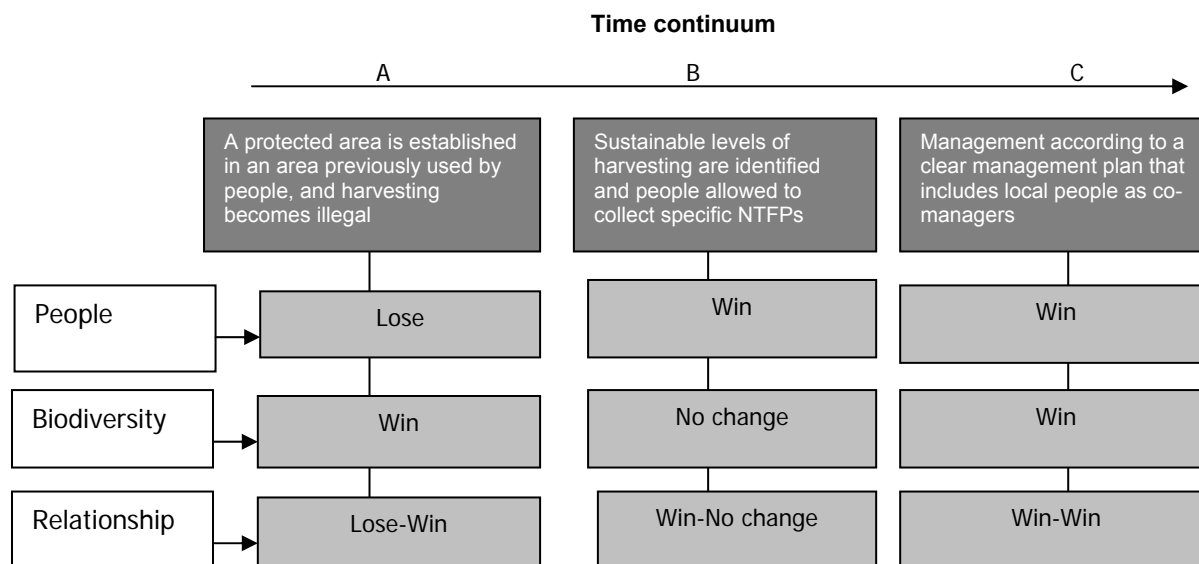


Figure1: An example of the evolution of the relationship between poor people and protected areas

Although the ‘win-win’ result is obviously attractive, it is usually hard to achieve on the ground. Lessons learnt from the ICDP experience have shown the difficulty in trying to reconcile two very different sets of objectives: poverty reduction with biodiversity conservation. Robinson and Redford mapped out different indicators of success for human livelihoods and for species and ecosystems and found that they are indeed very different⁹². For instance, an indicator of success for biodiversity conservation relates to species richness and diversity, while one of human well-being relates to participation in decision-making. Thus, it is understandably difficult to ensure positive outcomes on both accounts. In some cases it has even been argued that projects achieved neither conservation nor poverty reduction objectives⁹³. Nonetheless, enthusiasts have suggested that ‘win-win’ approaches are achievable and should be sought. Protected areas that are more flexible are more likely to provide a compromise solution. In fact, the 1990s saw a significant increase in protected areas in IUCN Category VI, which seeks a better balance between biodiversity aims and human needs⁹⁴. In reality while such approaches present an ideal situation there are few concrete examples showing both measurable improvements in human welfare and in biodiversity conservation⁹⁵ nor has there been a systematic comparison of the effectiveness of these different approaches in terms of biodiversity conservation. More often, trade offs between conservation and development will be necessary⁹⁶. A GEF evaluation of its biodiversity portfolio found that: “For many [protected area] projects, there are local costs imposed by restrictions in access and use, and a win-win solution is not an attainable goal”⁹⁷. The relationship between poverty and biodiversity conservation is however, far from static as it evolves over time⁹⁸. Thus, while certain difficult trade offs may be necessary at a given point in time, they may be more acceptable if viewed in a long term context.

‘Carrying capacity’ of protected areas

It also appears that generally, very few people are directly dependent on *individual* protected areas. This may be because the creation of protected areas often resulted in the eviction of people, or because protected areas are often in inhospitable locations. Highly productive ecosystems, such as grasslands or marine areas, are in fact greatly under-represented in the global network of protected areas.

For this reason the CBD has set targets related to protected area representation and in order for these to be met in the richest and most valuable land a more flexible approach involving trade offs between conservation objectives and social objectives will often be required.

The size of the population living in and around a protected area may have considerable influence on its ability to contribute to their well-being. If only a relatively small population relies on the various resources of a protected area these could be sufficient to help to reduce poverty. In other words, protected areas may function as a poverty reduction tool when only a relatively few people count on them for this purpose. On the other hand, when population pressure is too great, individual protected areas may not be so successful in attempting to provide for the population and indeed, population pressure may also negatively affect the values of the protected area. We need to be aware that in some cases attempting to promote protected areas as a tool to reduce poverty will simply not be feasible. There is a critical threshold beyond which human impact on the protected area would be too great to ever consider that poverty reduction and protected area objectives could co-exist⁹⁹. Even initially successful protected area strategies that help address poverty may in time run into problems if they also lead to human migration to the protected area thus stretching it beyond its carrying capacity. This may turn a ‘win-win’ situation into a ‘lose-lose’ one if not managed with care. Decision-makers and others need to accept the limitations of successful cases. A successful example of protected areas contributing to poverty reduction cannot necessarily be duplicated in different situations and also needs to be monitored over time.

WWF and DGIS portfolio: Peru and Ecuador

In Peru and Ecuador, WWF and DGIS have focused on improving management of the Pastaza river basin, while helping the Kandozi indigenous people. Commercialisation of fish eggs had been identified as a major threat to the fisheries. Improved management of the fisheries resulted in a nine-fold reduction in sales of fish eggs between 2005 and 2006 (from 7,500 kg in 2005 to 800 kg in 2006). At the same time, the Kandozis’ income was increased thanks to better organisation and training allowing them to increase the price they charged for fish by 40 per cent¹⁰⁰.

Managing protected areas to meet poverty reduction goals is therefore a major challenge. Protected areas have not been created to reduce poverty. However, ignoring poor people living in and around protected areas is not a viable solution, neither ethically, nor ultimately for the conservation aims of the protected area. Many protected areas actually represent an opportunity, given the right conditions, to reduce poverty levels because of their abundance of environmental goods and services. As discussed below, in many instances where poor people’s needs were not taken into account, or even worse, where significant injustices were done to them, the resulting unrest and conflict impacted negatively on the protected area¹⁰¹. In addition, in some cases creating protected areas and expelling people from land may result in a decline in biodiversity compared with the situation prior to gazettment of the area, when local people may have managed the area more effectively. For this reason, addressing poverty reduction within protected area management appears to be necessary in many circumstances.

Creation of protected areas may in some cases have exacerbated poverty

It is important to recognise that in some cases protected areas may have exacerbated poverty, particularly if we understand poverty as being wider than mere income (see chapter 3). The twentieth century saw the creation of numerous protected areas, in an attempt to rescue our natural wealth in the wake of heavy industrialisation, but, in some cases, this was done at a high human cost¹⁰². One estimate suggests that over ten million people have been displaced from protected areas by conservation projects¹⁰³.

There are two main reasons why some protected areas may have enhanced poverty. Firstly, protected areas harbour resources that poor rural people depend upon. Fencing off such areas is like cutting off access to their bank account. For example in the Democratic Republic of the Congo, the Bambuti Batwa were evicted from their ancestral lands when the Kahuzi-Biega National Park was created in the 1970s. Given that their traditional way of life had been centred on hunting and gathering from within the forest, they subsequently suffered a

dramatic decline in their welfare¹⁰⁴. In the Philippines, on Sibuyan island, the creation of Mount Guiting-Guiting Natural Park in 1996 and the consequent limitations on gathering products from the park, affected 1,687 individuals who considered this land their ancestral domain and who had until then collected honey, rattan, vines, medicinal plants and other NTFPs central to their livelihoods¹⁰⁵.

The second main reason that protected areas have sometimes enhanced poverty is that in times of difficulty, such as droughts or years of poor harvest, protected areas are often a backup resource for poor people. Thus, whilst people may not use certain resources all year round, or even every year, they may need to turn to them in times of duress. This happened for example in Southeast Asia during the 1997-98 financial crisis when many urban dwellers affected by the economic downturn returned to their villages and to a more nature-based lifestyle¹⁰⁶. Should this option no longer be available to them because of a strict protection status, then their vulnerability may be further exacerbated.

Many other, often locally-specific, instances of protected areas' probable contribution to poverty exist. In some cases, particularly where ethnic minorities are concerned, the establishment of protected areas on land traditionally managed by them may contribute to further alienating already marginalised groups. In other cases, conflict may arise because of the perceived imperialism of protected area management, which is rarely done by local people. It has been estimated that over 50 per cent of protected areas have been established on the ancestral domains of various communities¹⁰⁷. Sometimes, forced displacement following the establishment of a protected area has left people as 'environmental refugees' not able to cope in their new surroundings or with the disruption to their traditional lifestyle. In India, by 1993 it was estimated that 20 per cent of the country's tribal people had been displaced to make way for protected areas¹⁰⁸. The creation of the Amboseli National Park in Kenya deprived Masai pastoralists of traditional dry season cattle grazing¹⁰⁹. Wildlife can impact on neighbouring communities through crop raiding and predation, creating major problems that can impact negatively on human wellbeing. In China's Yunnan province the establishment of Baimaxueshan reserve led to increasing conflict, arrests and fines, as the population surrounding it had previously freely used many resources in the park¹¹⁰.

The creation of a protected area need not however, be a cause for increased poverty. In many of these examples, it has often been the approach to establishing and managing the protected area that has been at the root of the problem. In fact, in many cases, attempts have subsequently been made to remedy the initial conflicts with rural people, with varying degrees of success. Chapter 6 explores the implications of management approaches on people's levels of poverty.

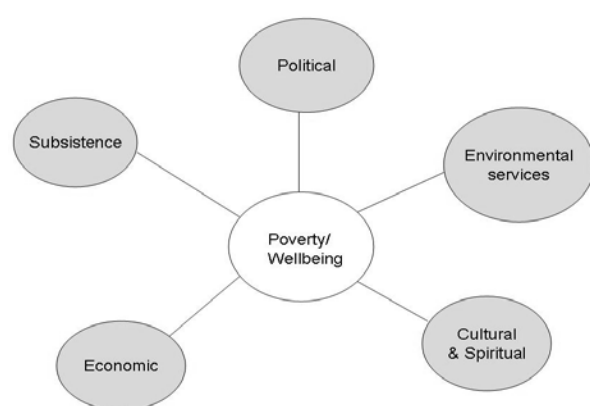
How can protected areas reduce poverty?

Despite the examples noted above, there have been numerous positive examples of protected areas contributing to poverty reduction. The poorest members of society are the most vulnerable – vulnerable to natural disasters, but also for instance, to economic downturns. This group is characterised by few, if any assets and minimal options. In such precarious conditions, the slightest extreme event may have major repercussions. A flood, a hurricane or a tsunami will have more dire consequences on those living in poverty than on those with healthy bank accounts, land and a good social network. Equally, a major rise in the price of a commodity will impact poor people dependent on this commodity more severely than wealthier people who may have a more varied income base or at least more options (including education) to vary that income base. Protected areas may have a role to play in physically protecting poor people. They may also offer more alternatives for poor people when economic conditions are worsened.

In many cases, the most important social role of protected areas is through benefits that are not narrowly economic. Because for decades poverty has been interpreted as merely a financial issue, examples of protected areas' contributions to poverty reduction have been confined to the financial aspects of poverty and support packages reflect this. Thus, in some instances where protected areas were set up on ancestral lands, local people were given money to abandon these same lands rather than looking at co-management options or different ways

of generating benefits. Alternatively, such compensation was sometimes ‘in kind’ through the establishment of new schools or hospitals. Unfortunately, the compensation often fell far short of the value of the land¹¹¹. Also, in more recent examples, approaches such as ICDPs sought to develop alternative income-generating activities to help local people develop long-term economic activities compatible with biodiversity such as bee-keeping or tree-nurseries.

If, on the other hand, poverty is understood as about more than just dollars, there appears to be more scope for protected areas to contribute to poverty reduction. Thus, if we take the recognised OECD or DFID multidimensional definitions of poverty identified in Chapter 3, we can begin to see the different ways in which protected areas could potentially contribute to poverty reduction. Based on such a multidimensional approach to poverty, DFID undertook a study on wildlife and poverty¹¹². The researchers identified five categories of positive livelihood outcomes that wildlife can provide poor people, namely: more income, reduced vulnerability, well-being, improved food security and environmental sustainability. These are delivered through for instance, ecotourism income, jobs as park guards, income from handicraft sales, natural medicines, building materials, NTFPs, bushmeat, provision of water etc.



The recent multidimensional definitions of poverty (or conversely of well-being) help to bring a much more thorough understanding of how people perceive poverty, and what elements can help reduce poverty or improve well-being. As discussed in the previous chapter, in this report we use a slightly adapted version of the OECD and DFID definitions to explore some of the evidence to date on the contribution that protected areas can make to poverty reduction. Figure 2 illustrates these five dimensions and they are discussed in more detail in the text below.

- ✓ **Subsistence:** Protected areas can provide a range of non-economic benefits that are important for subsistence, such as health, nutrition, clean water and shelter. Protected areas conserve vital resources. These same resources have often been used by poor, rural communities in ways that are not always well understood by rich, western communities. The above-mentioned DFID study on wildlife and poverty suggested that one eighth of the world’s poor (i.e. 150 million people) depend on wildlife for their livelihoods¹¹³. These resources do not necessarily increase income, but provide many of the other elements of well-being.

For example, several hundred million people depend on small-scale fisheries – the FAO states that fish account for “19 percent of the protein intake in developing countries, a share that can exceed 25 percent in the poorest countries and reach 90 percent in isolated parts of coastal or inland areas and in small island developing states”¹¹⁴. With the global crisis in fish stocks, small-scale fishing communities are extremely vulnerable; marine protected areas with regulated and sustainable small-scale fishing activities can sometimes increase the amount of fish landed within two years of establishment¹¹⁵.

Other examples of important subsistence values from protected areas include the reduction of risk related to water-related diseases, the protection of watersheds and the supply of clean water (in the Arguments for Protection report ‘Running Pure’, WWF found that around a third (33 out of 105) of the world’s largest cities by region obtain a proportion of their drinking water directly from protected areas¹¹⁶). “Globally, an estimated 24% of the disease burden (healthy life years lost) and an estimated 23% of all deaths (premature mortality) was attributable to environmental factors. Among children 0–14 years of age, the proportion of deaths attributed to the environment was as high as 36%”¹¹⁷. More details on the relationship between forests and freshwater can be found in Chapter 5.

- ✓ **Cultural and spiritual:** Many faith systems involve nature. Protected areas can harbour important sites and species from a spiritual or cultural point of view. Special areas in nature have long had spiritual value for different peoples across the world¹¹⁸. The subject of this protection may be the land, a particular feature within a landscape (such as a monastery, or a burial site or a sacred tree) or a particular species (for example, the olive tree is sacred both in Judaism and Christianity¹¹⁹). Cultural and spiritual values can also relate to historical values and non-religious values; intangible values that are hard to define but which can be just the simple enjoyment of being in a place protected for its biodiversity values.
- ✓ **Environmental services:** Protected areas can protect numerous ecosystem services such as climate regulation, watershed protection, coastal protection, water purification, carbon sequestration and pollination¹²⁰. For example, the watershed of the 4,244 ha Mount Makiling Forest Reserve, south of Manila in the Philippines supplies water to five districts and several water cooperatives that provide water for domestic, institutional and commercial users¹²¹. Many of these services are beginning to be more explicitly recognised by decision-makers and others and mechanisms to pay for these services through payments for environmental services (PES) are being developed.

Protected areas can also help protect against natural disasters. Studies following the Indian Ocean Tsunami in 2004 in Hikkaduwa, Sri Lanka, for example, found that where the reefs were protected by a marine park, tsunami damage reached only 50 metres inland and waves were only 2-3 metres high, whereas, just 3 km to the north, where reefs have been extensively affected by coral mining, the waves were 10 metres high, and damage and flooding occurred up to 1.5 km inland¹²². The issues relating to protected areas and environmental services are examined in more detail in Chapter 5.

- ✓ **Political:** Having access to land is ultimately a significant political matter. By having a say in the management of protected areas, poor rural people not only obtain the right to decide what happens to land that they and their children live on, but they also acquire an implicit role in society, as managers of an important resource.

For example, in 1980, the Kayan Mentarang National Park was created in East Kalimantan with 16,000 Dayak people living inside or near the park. Thanks to a participatory exercise involving community mapping the Dayak were able to establish their claims to the resources in the park and to continue to use and manage forest resources in the protected area¹²³.

- ✓ **Economic:** Protected areas can help to provide jobs and raise funds that support poverty reduction. Protected areas clearly can generate major economic gains. According to an economic analysis by the National Parks Conservation Association, America's national park system generates at least US\$4 for state and local economies in return for every US\$1 the Federal Government invests in the parks' budgets¹²⁴. In Bolivia, the Ministry of Planning and Development estimates a rather more modest US\$1.22 of indirect benefits for every US\$1 spent on cultural and natural tourism¹²⁵ and in Costa Rica while about US\$12 million is spent annually to maintain the national parks, the foreign exchange generated by parks in 1991 was more than US\$330 million from some 500,000 overseas visitors¹²⁶. In theory larger and more representative systems of protected areas could provide an even greater range of benefits. It has been estimated that an ambitious target of conserving 20-30 per cent of the world's seas, could create around one million jobs, increase the sustainability of a global marine fish catch (worth around US\$70–80 billion per year) and ensure the sustainability of marine ecosystem services with a gross value of roughly US\$4.5–6.7 trillion a year¹²⁷.

To put economic benefits such as these into some kind of perspective economists are beginning to try to assess the 'total economic value' of protected areas by analysing opportunity costs in terms of the possible economic benefits forgone because land or water is not available for other uses and assessing costs and benefits to the local, national or global communities. Our understanding of these issues is likely to increase

quite quickly over the next few years and information is already starting to build up. Studies in Cambodia estimate that local residents depend on the natural resources of the coastal Ream National Park for subsistence and income to a value of US\$1.2 billion a year¹²⁸. Analysis of costs and benefits for marine protected areas in Cape Province, South Africa also found benefits outweighing costs¹²⁹. Total added value of protected landscapes in the Northeast of England was estimated at being US\$446 million per year¹³⁰.

Because of the particular focus on economic aspects of protected areas table 4 at the end of this chapter reviews some examples of protected areas contributing to the socio-economic dimension of poverty reduction. In order to provide some reference point for the financial figures provided, we make use of the United Nations Human Development Index (HDI)¹³¹. The HDI is a composite index that covers income, education and health. Countries are rated for each of these elements against maximum and minimum values to provide a ratio and an average of these three values produced. The most developed countries are thus at the top of the HDI index.

It should be noted that table 4 refers to specific economic benefits. It does not attempt to compare these with benefits forgone or to comment on issues of protected area management. These questions are addressed later in the report.

Table 4: **Examples of economic contributions of protected areas to poverty reduction**

Country, HDI ranking and GDP/capita ^{iv}	Name of protected area and details ^v	Contribution to economic dimension of poverty reduction
Low HDI ranking		
Zambia <i>HDI rank: 165</i> <i>GDP/cap: US\$943</i>	Lupande Game Management Area, adjacent to the South Luangwa National Park (Forest Reserve 5,613 ha and Game Management Area, 484,000 ha, Category VI, established 1971)	Two hunting concessions earn annual revenues of US\$230,000 for the 50,000 residents. The revenue is distributed both in cash to the local community and to village projects such as schools. Ultimately a total of 80 per cent of revenue from hunting goes to the community ¹³² .
Tanzania <i>HDI rank: 162</i> <i>GDP/cap: US\$674</i>	Selous Game Reserve (5,000,000 ha, Category IV, established 1922)	A retention fund holds 50 per cent of the revenue generated by the reserve. From 1999 to 2002, a total of US\$890,000, or 11 per cent of the total retention fund, was committed to developing schools and infrastructure ¹³³ .
	Serengeti National Park (1,476,300 ha, Category II, established 1951)	Serengeti generates 385 jobs. In the ten years between 1993 and 2003 the park contributed US\$292,000 to local community projects (particularly in the field of education) ¹³⁴ . In 1999, some US\$15,000 was spent in Bunda and Serengeti Districts, contributing up to three quarters of the cost of development projects, i.e. construction, rehabilitation or maintenance of local infrastructure such as schools ¹³⁵ .

^{iv} All GDP figures are taken from: UNDP (2006); *Human Development Report*, UNDP, New York, USA

^v All protected area data are taken from the UNEP WCMC World Database on Protected Areas unless stated otherwise (www.unep-wcmc.org/wdpa accessed on 15 February 2007)

Country, HDI ranking and GDP/capita ^{iv}	Name of protected area and details ^v	Contribution to economic dimension of poverty reduction
Kenya <i>HDI rank: 152</i> <i>GDP/cap: US\$1,140</i>	Kisite (1,100 ha, Category II, established 1978) and Mpunguti (2,800 ha, Category VI, established 1978) Marine Parks	<p>The total value of both marine parks is estimated at about US\$2 million/year. Between 1993 and 1998 a proportion of park revenue went to the Kenya Wildlife Service and was re-distributed primarily to schools and fishermen, through a Development Fund¹³⁶.</p>
Medium HDI ranking		
Uganda <i>HDI rank: 145</i> <i>GDP/cap: US\$1,478</i>	Bwindi Impenetrable Forest National Park (32,092, Category II, established 1991)	<p>A Trust Fund established to protect mountain gorilla habitat distributes 60 per cent of its funds to community projects promoting conservation and sustainable development activities (including schools, feeder roads etc.)¹³⁷. Two community campsites have been set up near the park. In 2004, Buhoma campsite earned US\$70,628 (up from US\$22,000 in 2001) and employed 11 local villagers on a permanent basis. The revenue is used in community infrastructure projects, such as provision of a water pump¹³⁸.</p>
Congo Brazzaville <i>HDI rank: 140</i> <i>GDP/cap.: US\$978</i>	Lossi Gorilla sanctuary (32,000ha, category unset, establishment date not recorded)	<p>In 1998 a local association (AATL) was created, which, amongst other objectives, aims to promote tourism and community development. In 2001, AATL had total savings of US\$6,000 obtained mainly from ecotourism revenue. Thanks to financing from the AATL and material support from ECOFAC (Programme for the conservation and rational use of forest ecosystems in Central Africa), a local health centre was built and a health advisor recruited¹³⁹.</p>
Nepal <i>HDI rank: 138</i> <i>GDP/cap: US\$1,490</i>	Royal Chitwan National Park (93,200 ha, Category II, established 1973)	<p>The Baghmara Community Forest User Group was set up in 1996 in the buffer zone of the park and has earned US\$175,000 since then in wildlife viewing (although earnings went down in recent years due to political unrest). The Group used the income to set up biogas plants. It also operates a micro credit scheme providing loans to community members at low interest rates¹⁴⁰.</p>
Lao PDR <i>HDI rank: 133</i> <i>GDP/cap: US\$1,954</i>	Nam Et National Biodiversity Conservation Area (170,000 ha, Category VI, established 1993) and Phou Loei National Biodiversity Conservation Area (150,000 ha, Category VI, established 1993)	<p>Eighty one village communities depend on the area for non-timber forest products (NTFPs) whose value is estimated at US\$1.88 million/year. Of this amount about 30 per cent is cash income and the remainder is for subsistence. In 2003, the sale of NTFPs accounted for between 41-76 per cent of</p>

Country, HDI ranking and GDP/capita ^{iv}	Name of protected area and details ^v	Contribution to economic dimension of poverty reduction
		average family income in the Nakai district ¹⁴¹ . An assessment of NTFPs values them at US\$250 per annum for each household living outside the conservation area, US\$500 for those on the border, and almost US\$677 for those inside in the conservation area. These figures compare with a per capita GDP for Houaphan province of US\$180 ¹⁴² .
	Nam Ha National Biodiversity Conservation Area (222,400 ha, Category V, established 1993)	The Ban Nammat Mai community in Nam Ha is estimated to earn about 40 per cent of its total village income from tourism, mainly through accommodation and food. About half of the 33 village households have almost doubled their average quarterly income thanks to tourism. Most of this money is spent on medicines, hospital visits and food ¹⁴³ .
	Xe Piane National Biodiversity Conservation Area (240,000, Category VI, 1993)	In Kokpadek in southern Laos, before a co-management system was put in place, up to 60 per cent of working adults migrated to the Boloven Plateau in the dry season for jobs on plantations. Now less than 10 per cent of the work force reportedly migrates, an indicator that the population can now obtain their daily needs from the protected area ¹⁴⁴ .
Comoros <i>HDI rank: 132</i> <i>GDP/cap: US\$1,943</i>	Moheli Marine Park (40,400 ha, Category II, established 2001)	Agreements signed with villagers to promote sustainable use of the resources have led to an increase in fish catch from 160 kg/month to over 300 kg/month. Revenues for 250 fishermen working in the park have doubled. Thirty new jobs were created in ecotourism (a number is expected to increase) ¹⁴⁵ .
Botswana <i>HDI rank: 131</i> <i>GDP/cap: US\$9,945</i>	Okavango Delta System (6,864,000 ha, Ramsar site, established 1996, includes the proposed Okavango Delta Wildlife Management Area and the Moremi Game Reserve, 496,830ha, Category IV, established 1965)	The Okavango Delta is home to an estimated 122,000 people, 90 per cent of whom are dependent on the delta for their livelihoods. In 2001, 923 people were employed in 30 tourist accommodation facilities. It is estimated that 50 (i.e. nearly 80 per cent) of the safari camps and lodges in the delta employ about 1,658 people, which represents 16.6 per cent of formal employment in the tourism sector. In 2001, community organisations in the delta generated an estimated US\$800,000 through contracts and joint venture partnerships with safari operators, sale of hunting quotas, crafts and small-scale tourism ventures ¹⁴⁶ . Part of this money has been reinvested in community

Country, HDI ranking and GDP/capita ^{iv}	Name of protected area and details ^v	Contribution to economic dimension of poverty reduction
		development projects such as recreational facilities, vehicles, lodges, campsites and bars, as well as to pay the salaries of employees in Trusts ¹⁴⁷ .
Cambodia <i>HDI rank: 129</i> <i>GDP/cap: US\$2,423</i>	Ream National Park (21,000 ha, Category II, established 1995)	About 30,000 people live in or around the park and up to 84 per cent of households depend on the park for their subsistence and income. The estimated net value of the park to households is US\$1.24 million/year, an average of US\$233/year per household ¹⁴⁸ .
India <i>HDI rank: 126</i> <i>GDP/cap: US\$3,139</i>	Buxa Tiger Reserve (36,899 ha, Category IV, established 1986)	One study reveals that 54 per cent of families living in and around Buxa derive their income from NTFPs harvested in the reserve ¹⁴⁹ .
Namibia <i>HDI rank: 125</i> <i>GDP/cap: US\$7,418</i>	Caprivi Game Park (582,750 ha, Category VI, established 1968)	Good management and sustainable harvesting techniques of palms have enabled local women to supplement household incomes by selling woven palm baskets to tourists. Producers have grown from 70 in the 1980s to more than 650 by the end of 2001. This is one of the few sources of income for women ¹⁵⁰ .
South Africa <i>HDI rank: 121</i> <i>GDP/cap: US\$11,192</i>	Sabie Sabie Game Reserve (13,641 ha, Category IV, unknown establishment date)	The reserve, which is at the border of the Kruger National Park, has a number of lodges and operates ecotourism tours. It employs 190 locals and thus contributes to the livelihoods of about 1,200 people ¹⁵¹ .
	Kruger National Park (1,898,859 ha, Category II, established 1926)	A study of Kruger National Park suggests that, thanks to ecotourism, wildlife conservation is 18 times more profitable than using the same land for livestock and crops ¹⁵² .
Guatemala <i>HDI rank: 118</i> <i>GDP/cap: US\$4,313</i>	Maya Biosphere Reserve (2,112,940 ha, MAB, 1990), the biosphere reserve incorporates many other protected areas, such as the Tikal National Park and World Heritage Area, Laguna del Tigre National Park and Cerro Cahuí Protected Biotope	The Maya Biosphere Reserve provides employment for over 7,000 people in the Petén region of Guatemala and generates an annual income of approximately US\$47 million. The reserve is credited with close to doubling local family incomes. Five per cent of net earnings from ecotourism goes to local people and is invested in community projects such as handicraft production and local schools. Women are an important target group for these projects ¹⁵³ .
Bolivia <i>HDI rank: 115</i> <i>GDP/cap: US\$2,720</i>	Kaa Iya del Gran Chaco National Park and Integrated Management Natural Area (3,441,115 ha Category IV, established 1995)	A US\$3.7 million programme, which included a US\$1 million trust fund, has been created to support the national park. US\$300,000 is earmarked for strengthening indigenous organisations, about US\$700,000 for pilot

Country, HDI ranking and GDP/capita ^{iv}	Name of protected area and details ^v	Contribution to economic dimension of poverty reduction
		sustainable production activities and US\$1.5 million to support land titling for indigenous territorial claims by the Guaraní-Izoceños, the Chikitanos and the Ayoreodes ¹⁵⁴ .
	Eduardo Avaroa Reserve (714,845 ha, Category IV, established 1973)	About 25 per cent of the park revenue should go to the local Quetena communities, although in reality it would seem that less than that amount is actually transferred ¹⁵⁵ .
Vietnam <i>HDI rank: 109</i> <i>GDP/cap: US\$2,745</i>	Hon Mun Marine Protected Area (10,500 ha, Category unset, established 2002)	About 5,300 people depend on the reserve, particularly for reef-related aquaculture and near-shore fishing and its gross fisheries value is estimated at US\$15,538 per km ² . A study found that 30 per cent of 259 respondent households in villages around the marine park indicated that their situation was better than before the protected area was established ¹⁵⁶ .
Indonesia <i>HDI rank: 108</i> <i>GDP/cap: US\$3,609</i>	Bunaken National Park (79,060 ha, Category II, established 1989)	Thirty per cent of the park entrance revenues are used for development programmes in local villages. Forty thousand people benefit economically from the park and over 1,000 jobs have been created for local people ¹⁵⁷ .
	Komodo National Park (181,700 ha, Category II, established 1980 and declared a World Heritage Site in 1991)	Between 1980 and 1997, it was calculated that about US\$1.25 million and over 600 jobs had been generated by the park; although distribution of these benefits has not been even across all stakeholder groups ¹⁵⁸ .
Fiji <i>HDI rank: 90</i> <i>GDP/cap: US\$6,066</i>	Turtle Island Marine Protected Area (MPA) (a locally managed reserve declared by resource owners but not legally regulated)	A community foundation set up within the MPA channels revenues to village chiefs to address social needs. The foundation currently has assets greater than US\$200,000 and typically receives US\$20,000 to US\$30,000 annually. The trustees of the Foundation allocate approximately US\$10,000 annually to local (mainly educational) projects ¹⁵⁹ .
Jordan <i>HDI rank: 86</i> <i>GDP/cap: US\$4,688</i>	Dana Wildlife Reserve (31,000 ha, Category IV, established 1989)	By 1997, income-generating activities in the Dana Reserve had raised US\$260,000, created 38 new jobs and provided increased financial benefits to over 140 people. ¹⁶⁰
Philippines <i>HDI rank: 84</i> <i>GDP/cap: US\$4,614</i>	Apo Island (78 ha, Category V, established 1994)	Average fish catch for hook and line fishing has increased from 0.15 kg/man/hr in 1980-81 to 1-2 kg/man/hr in 1997-2001. It is estimated that the reef equals US\$500/ha/yr in revenue to the community thanks to tourism. A fee system for tourists has generated mean monthly revenues of US\$3,741, 75 per cent of which goes to the local community ¹⁶¹ .

Country, HDI ranking and GDP/capita ^{iv}	Name of protected area and details ^v	Contribution to economic dimension of poverty reduction
Ecuador <i>HDI rank: 83</i> <i>GDP/cap: US\$3,963</i>	Awa Indigenous Protected Area (101,000 ha, Category VI, established 1988)	<p>There are 4,500 Awa living in 21 communities. They manage their protected area for sustainable timber. While timber intermediaries paid US\$60 per m³ for sawn 'chanul', the Awa Forestry Programme sells its product for US\$240 per m³ (anticipating production of 200 m³ per year, therefore a total of US\$48,000 per year).</p> <p>Of the US\$240, US\$60 goes to external costs, US\$60 goes to community members who worked on the extraction and the remaining US\$120 is a stumpage fee to the community (or family)¹⁶².</p>
	Cuyabeno Reserve (603,380 ha, Category VI, established 1979)	<p>For five communities in the reserve, per capita annual income from ecotourism has been estimated at between US\$80 and US\$175. In Playas (which is situated inside the reserve) the wage for permanent employment at the Flotel Hotel is about double the average for local daily wage¹⁶³.</p>
	Galápagos Marine Reserve (13,300,000 ha, Category VI, established 1996), includes the Galápagos National Park (799,540 ha, Category II, established 1959). The area was also designated as a World Heritage Site in 1978	<p>A total population of some 16,000 people inhabit five of the Galápagos islands, and because of better economic opportunities population growth continues due to migration from the mainland¹⁶⁴. Annual revenues from tourism which supports 80 per cent of the islands' residents amount to US\$60 million¹⁶⁵.</p>
Peru <i>HDI rank: 82</i> <i>GDP/cap: US\$5,678</i>	Manu National Park (1.5 million ha, Category II, established 1973)	<p>Accommodation for ecotourists provides an estimated US\$500,000 per annum to the local indigenous communities living in and around the park¹⁶⁶.</p>
China <i>HDI rank: 81</i> <i>GDP/cap: US\$5,896</i>	Baimaxueshan Nature Reserve (281,640 ha, Category V, established 1988)	<p>Mushroom harvesting in the park has spread to 70 villages and incomes have risen 5 to 10-fold¹⁶⁷. One kilogramme of matsutake mushrooms can earn a harvester more money than the average annual wage in Yunnan Province¹⁶⁸.</p>
Brazil <i>HDI rank: 69</i> <i>GDP/cap: US\$8,195</i>	Mamirauá State Ecological Station, 1,124,000 ha, Category Ia, established 1990)	<p>An Economic Alternatives Programme started in 1998 targeted 10,000 people living in five villages in the area. Subsequently incomes have increased by 50 per cent and in some areas by 99 per cent. Infant mortality has declined by 53 per cent with better health education and water quality¹⁶⁹.</p>

Country, HDI ranking and GDP/capita ^{iv}	Name of protected area and details ^v	Contribution to economic dimension of poverty reduction
High HDI ranking		
Trinidad and Tobago <i>HDI rank: 57</i> <i>GDP/cap: US\$12,182</i>	Matura (8,200 ha, Category II, established 1990, but designation unclear)	It is estimated that income generated from turtle-viewing in Matura averages US\$28,572 per season, between March and August. This income is managed by the community ¹⁷⁰ .
Mexico <i>HDI rank: 53</i> <i>GDP/cap: US\$9,803</i>	El Triunfo Biosphere Reserve (119,177 ha, Category VI, declared a Man and Biosphere Reserve in 1990)	Household income has increased by between 50-125 per cent thanks largely to agroforestry activities ¹⁷¹ .
Costa Rica <i>HDI rank: 48</i> <i>GDP/cap: US\$9,481</i>	Tortuguero National Park (18,946 ha, Category II, established 1975)	<p>In 2003, direct income to the Gandoca community (situated 125km from the Park) was estimated at US\$92,300; i.e. 6.8 times more than the potential income from selling turtle eggs on the black market. It was also estimated that each local tour guide in Tortuguero earned on average US\$1,755-3,510 during a five month period; this is 2 to 4 times the minimum wage.</p> <p>Overall it is estimated that 359 jobs have been generated by ecotourism. In addition, a local high school, clinic and improved water and waste treatment were set up thanks to revenue from the park¹⁷².</p>
Seychelles <i>HDI rank: 47</i> <i>GDP/cap: US\$16,652</i>	Cousin Island Special Marine Reserve and Praslin National Park (2 ha, Category Ia, established 1975 and 675 ha, Category II, established 1979 respectively)	<p>Educational tourism is serviced by three large travel agencies, as well as several locally-owned, small to medium-sized operators and charter boat businesses on neighbouring Praslin Island. The owners and employees of these businesses are all Seychellois.</p> <p>It is estimated that about US\$600,000 is generated by these activities through direct and indirect revenues, almost all flowing to local businesses¹⁷³.</p>
Germany <i>HDI rank: 21</i> <i>GDP/cap: US\$28,303</i>	Muritz - Seen – Park Landscape Protection Area (30,000 ha, Category V, established 1962)	Tourism in the park generates over US\$ 17.7 million per year for the region, supporting an estimated 628 jobs ¹⁷⁴ .

Chapter 5: Types of benefits from protected areas

Background

Protected areas were set up to safeguard a number of important biological values. Many of these values in turn can provide and have provided numerous benefits to people, many of them poor people. In this chapter we explore in greater detail the types of benefits offered by protected areas (and indeed, healthy ecosystems more widely) and their potential contribution to poverty reduction.

In an analysis of the links between protected areas and poverty reduction published for the World Conservation Congress in 2004, IUCN proposed that governments, aid agencies, NGOs and the private sector need to “better define the linkages between protected areas and poverty”¹⁷⁵. A lot of the papers, books and articles that have looked at the interface between poverty and the environment in the years since have indeed attempted to identify and sometimes also to quantify these links. However, many of these still suffer from a number of disadvantages. First, too many make claims that are vague, solely qualitative or, if hard numbers are given at all, these are often based on fairly flimsy evidence. Readers of the literature will soon come to recognise a small suite of case studies that are referred to time and again, at least some of which do not really stand up to hard scrutiny. There is in particular insufficient discussion about whether something that works in one situation can be transferred easily to others. Next, the *type* of benefits claimed from protected areas is often poorly defined and confused, so that for instance compensation paid to a community for loss of goods and services is treated as being the same as direct benefits from tourist revenue or from increased fishing opportunities created by enhanced breeding in marine reserves. We believe that it is important to distinguish between benefits that come because someone (the state, an NGO, etc) seeks to offset the disadvantages that have impacted on communities as a result of protection from those benefits that accrue because the ecosystem being protected itself has direct and accessible values to people. In addition (as discussed above), it is not always very clear exactly what is being measured, with ‘poverty’ defined in a number of different ways so that indicators can range from simple financial statistics, through various measures of poverty *reduction* or poverty *alleviation*, to broader concepts such as *resilience*, *sustaining livelihoods* or *well-being*. Studies tend to look at single values and those assessing multiple functions and uses, or looking at the impacts of environmental changes over time, remain rare¹⁷⁶. And lastly, there is often confusion about what constitutes a protected area, with areas being set aside voluntarily by communities being treated as equivalent to state-run protected areas. Many community conserved areas probably should be recognised as protected areas. But as long as they are not, including them within an analysis of the benefits that protected areas provide in addressing problems of poverty can be confusing.

We have done our best here to draw together a balanced view of benefits from the mass of literature and studies available, but much work remains to be done in this regard.



Tribal people from Meka village in the buffer zone of Korup National Park, Cameroon

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Different types of benefits

We focus here on the types of benefits that protected areas might provide to the people living within them or close by. Drawing on the analysis outlined in Chapter 4 and on other typologies¹⁷⁷, we distinguish two main ways in which protected areas can provide tangible results in poverty reduction. First, establishment of a protected area may necessitate or **trigger some form of compensation** in terms of, for instance money, alternative living space or support for livelihood options. Here it is not the protected area as such that provides the benefit but rather the measures put in place as a result of declaring an area protected. Secondly, the natural resources within a protected area may **contribute directly to poverty reduction**. We look at both categories below and then illustrate how they can be transferred to poor people in figure 3 towards the end of the chapter.

- ✓ **Compensatory mechanisms:** steps taken to support communities in and around protected areas to address problems of benefits foregone and in some cases to counter additional problems created by the protection. These include: various management responses to reduce negative impacts; support for education and capacity-building; providing alternative livelihoods and homelands; and sometimes direct compensation or insurance schemes as cases of human wildlife conflict. They are largely independent of the particular mixture of species and ecosystems in the protected area except for example in the case of mitigation against problem animals. A range of examples of compensatory mechanisms is outlined in table 5 below.

Table 5: **Some of the potential compensatory mechanisms used in protected areas**

Compensatory mechanisms	Examples
Mitigating human-wildlife conflict	Protecting against elephant damage to farms: as in warning systems developed along the Kinabatangan River in Sabah, Malaysian Borneo
Insuring against human-wildlife conflict	Providing a flock of communally-owned sheep to replace those lost to particular families as a result of predation from animals in protected areas in Pakistan
Modifying land management inside the protected area	Providing funds to compensate farmers for sympathetic management for wildlife: grants have helped to modify use of Alpine meadows in Hohe Tauern National Park, Austria
Modifying land management outside the protected area	Helping to develop sustainable agriculture near a protected area to compensate for loss of resources: as in Dja National Park, Cameroon
Supporting increased educational capacity	Providing funds for school buildings: visitors have funded schools around Bwindi Impenetrable Forest Reserve in Uganda
Supporting increased health care	Contributing to providing medical facilities: as in Djouj National Park in Senegal where a medical centre is included in park headquarters
Building capacity for alternative livelihoods	Training local people as guides as in Keoladeo National Park, India or in making local crafts to sell as around the Dana Reserve, Jordan
Providing alternative homeland	Resettlement of communities to other land: communities are being supported in moving from Cat Tien National Park in southern Vietnam.
Sources: examples collected by the authors	

- ✓ **Direct benefits:** potential or actual benefits from the protected area. These draw directly on the fact that the protected area is maintaining a natural or semi-natural ecosystem and can include: resources; various forms of environmental benefits; a wider range of social and cultural attributes; and political considerations. Here we focus on those values that rely on the existence of a functioning ecosystem. Each of these can relate to poverty reduction in a number of different ways. In economic terms they can provide income for poor communities through direct sales or jobs and in some cases through newer mechanisms such as payments for environmental services (PES) schemes, whereby communities manage the ecosystem in a certain way that provides benefits (such as clean water or mitigating the impacts of climate change) to others who are willing to pay for this benefit. If we take the broader definition of poverty to include the five elements described in Chapter 3, a matrix can identify the full range of possible direct benefits. Table 6 attempts to do this by summarising information on the range of possible values from protected areas and links these with

the five dimensions of poverty identified and described in Chapters 3 and 4. Because many of the values relate to several dimensions of poverty we have also indicated the most important links through a numerical key (differentiating between important and minor values and those that are not usually relevant) and by shading. The list follows the order and contents used in the Protected Areas Benefits Assessment Tool (PA-BAT) developed in parallel with this report, which was used to collect information during the research phase. Issues related to homeland, treated in a separate section of the PA-BAT, have been added to the main list so that all potential 'poverty' values are collected together in one place. The table and associated weightings indicate a most common situation but there will certainly be exceptions. Note that most of these values will also be available from other natural ecosystems, whether or not they are in protected areas.

Table 6: **Potential values from protected areas**

Values	Dimensions of poverty				
	Subsistence	Economic	Cultural / spiritual	Environment services	Political
Food and drink					
Wild game	1	1	1	3	3
Wild food plants	1	1	2	3	3
Fisheries and spawning areas	1	1	2	2	3
Traditional agriculture	1	1	2	3	3
Livestock grazing and fodder	1	1	3	3	3
Non-commercial water use	1	3	3	2	3
Commercial water use	3	1	3	2	2
Cultural and spiritual values					
Cultural & historical values	2	1	1	3	2
Sacred natural sites/landscapes	2	1	1	3	2
Pilgrimage routes	3	1	1	3	2
Health and recreation					
Medicinal herbs for local use	1	2	2	3	3
Pharmaceuticals	3	1	3	3	3
Recreation and tourism	3	1	1	3	2
Knowledge					
Research, traditional knowledge	2	1	1	3	2
Education	3	1	1	3	2
Genetic material	2	1	3	3	3
Environmental benefits					
Climate change mitigation	3	1	3	1	2
Soil stabilisation	2	1	3	1	2
Coastal protection	2	1	3	1	2
Flood prevention	2	1	3	1	2
Water quality / quantity control	2	1	3	1	2
Materials					
Non-wood products	1	1	3	3	3
Management / removal of timber	1	1	3	3	3
Homeland, security of land tenure					
Home for local communities	1	2	2	3	1
Home for indigenous people	1	2	2	3	1
Peace Parks	2	2	2	3	1

Key:

1 = important value

2 = usually only a minor value

3 = not usually a value

The values outlined in table 6 relate to poverty reduction. Protected areas have many other values – primarily related to nature conservation (such as biodiversity, ecosystems, geodiversity) but also in terms of providing recreation to both rich and poor, maintaining important historical land-use patterns, etc. ***Failure to provide multiple poverty reduction benefits is not necessarily a sign that the protected area is itself a failure*** and conversely an over emphasis on social values may detract from the primary reason that society sets aside protected areas. There have been suggestions that all protected areas should contribute to poverty reduction targets and we reject this; an issue that we return to at the end of this chapter.

Direct benefits from protected areas

While in the previous chapter we looked at the ways in which protected areas can contribute to the five dimensions of well-being, here we go in more detail on the individual types of benefits that protected areas provide. Detailed discussion of the range of direct benefits would take a long book in itself. Many are described in other volumes in the *Arguments for Protection* series, and in publications from institutions such as IUCN¹⁷⁸. The following section therefore gives some examples that relate most directly to issues of poverty reduction. For clarity, in the sections below we separate out the different benefits that protected areas may provide, using the typology already outlined in table 6. But this is a simplification; one of the shortcomings identified with respect to evaluating protected area benefits is that most studies have tended to look at one particular benefit and not tried to carry out an overall cost benefit analysis. When considering the individual benefits discussed below, it is important to bear in mind that they are part of a whole and that there will be additional benefits and also additional costs to be included in the analysis. It is also important to remember that our analysis, as noted in previous chapters, aims to look at all aspects of poverty reduction rather than just financial gain. For example, research in the Annapurna Conservation Area in Nepal found that while most people within the area recognised some benefits from conservation, such as improved infrastructure, health care etc, only 14.9 per cent received direct cash income from tourism¹⁷⁹. Having said that, many benefits such as flood prevention are often valued in monetary terms in order to provide a common measure to assess costs and benefits and aid decision-making.



Sustainable fishing in Wakatobi Marine National Park, Southeast Sulawesi, Indonesia

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Food and drink: many of the world's poorest people rely on wild species and products from traditional cultural landscapes for a major part of their diet¹⁸⁰, particularly during shortages¹⁸¹ and political unrest¹⁸². Animal food includes bushmeat, fish and shellfish, bird and turtle eggs, invertebrates, honey and flavouring products¹⁸³. Wildlife is an important food for 150 million people according to the UK Department for International Development¹⁸⁴. Bushmeat makes up more than a fifth of animal protein in rural diets in over 60 countries¹⁸⁵ rising to 80 per cent in areas such as rural Kenya¹⁸⁶. Even if species have been hunted to low levels, as in much of West Africa, wild meat is popular – 90 per cent of people in Ghana say they will eat bushmeat if it is available¹⁸⁷. Decline in bushmeat is a factor in lower dietary quality: for instance the charity Save the Children cites evidence that people in rural Malawi eat substantial numbers of mice in the absence of any larger animals¹⁸⁸. Use of wild food is not confined to hunter-gatherers and for instance is a major food for farmers in Africa¹⁸⁹, where 1-3.4 million tonnes are used each year¹⁹⁰. Bushmeat trade comes with substantial conservation costs and is leading to rapid biodiversity loss in the tropics¹⁹¹; shortages in Asia mean that it is now often a luxury food for city dwellers¹⁹² and often unsustainable¹⁹³. A UK government study, which estimated higher

global bushmeat consumption than the figures quoted above, put annual value at around US\$7 billion¹⁹⁴. Most of our fish comes from the wild; although aquaculture supplies 43 per cent of the total¹⁹⁵ many operations rely on wild-caught fish for feed¹⁹⁶. An estimated 250 million people in developing countries are directly dependent on small-scale fisheries for food and income¹⁹⁷.

A huge variety of plants are eaten, as fruit, nuts, leaves, roots and tubers¹⁹⁸. FAO estimates that 18,000-25,000 wild plant species are used as food in the tropics¹⁹⁹, collected from all ecosystems. In India, 50 million people are estimated to be directly dependent on forests for their subsistence²⁰⁰. Traditional agriculture also remains important and a third of the world's farmers (450 million people) rely wholly on manual labour and do not use either commercial crop varieties or agrochemicals²⁰¹. There are 100-200 million mobile pastoralists²⁰² and many more farmers dependent on grazing. Fodder for livestock is one of the most important (and under-reported) non-timber forest products according to FAO, particularly in Asia²⁰³. Collection of wild food products is also a way of raising money for poor people. A few examples are illustrative²⁰⁴. In northeast Brazil over two million people are supported by the sale of Barbussa palm (*Orbignya martinia*), particularly during the slack period for agriculture²⁰⁵. In Zimbabwe, research in 1997 suggested that 37 per cent of rural income came from wild food products and this is likely to have increased since. In India, 90 per cent of the people in Manipur state depend on forest products as a major source of income²⁰⁶. The overall value of international trade in wildlife products alone has been estimated at US\$15 billion a year²⁰⁷. Traditional agriculture and pastoralism are the major sources of income for practitioners and their families; although no detailed figures have been calculated, these number well over a billion people around the world.

The relationship between protected areas and food production is complex. All of these activities can and do take place in protected areas, but not always officially. Illegal collection of food is in fact the most frequent problem cited by protected area managers – poaching was identified as the number one threat in around a third of protected areas assessed in a global study²⁰⁸. Poaching activities vary from subsistence collection by local people (who may just be continuing past practices from before the protected area was set up) to highly organised criminal gangs selling to urban or international markets²⁰⁹. The bushmeat trade is affecting many protected areas²¹⁰ and hunting often leads to a net decline in species²¹¹. Clashes between encroaching farmers or mobile pastoralists and protected area managers also remain a major issue²¹².

Establishment of protected areas has also deprived people of food and other resources. Research in Thailand found that closing off forests to local people, who eat about a hundred plant species, led to reduced food supply²¹³. Many people living around protected areas complain of wildlife damaging crops²¹⁴, for instance losses around the Bhadra Tiger Reserve in south India were on average almost one livestock animal lost to predation per family per year with 11 per cent of grain crops also lost to elephants²¹⁵. Although many marine protected areas have been established specifically because they protect fish stocks²¹⁶ and enjoy the support of local communities because of this²¹⁷, there are some studies which question the benefits to fisheries and results may differ depending on the species²¹⁸.

This said, there are, an increasing number of protected area managers who regard maintaining food supplies as a significant objective: some protected areas have even been established specifically because of their value to food production. Many others modify their management systems to allow local communities to maintain or regain benefits in terms of food production. Table 7 below summarises the main types of interactions.

Table 7: Main ways in which protected areas support provision of food and water to poor people

Link with food production	Examples	Type of PA
Protected areas established to maintain stocks of wild food (typically breeding areas or seed stocks) which are often harvested beyond the protected area boundaries.	Typical of many no-take zones in marine protected areas such as the Nabq Managed Resource Protected Area, Egypt ²¹⁹ and various approaches to maintaining freshwater fish stocks as in the Lower Mekong ²²⁰	Possible in any PA outside IUCN Category Ia

Link with food production	Examples	Type of PA
Protected areas that include within management plans the permission to collect foodstuffs, often with restrictions, designated areas etc which may or may not be worked out cooperatively with the local community.	Agreements for collection of non-timber forest products are in place in Mount Elgon National Park, Uganda ²²¹ or hunting of game only by the Penan indigenous people in Mulu National Park, Sarawak ²²²	Possible in any PA outside IUCN Category Ia
Protected areas established specifically to protect agrobiodiversity such as land-races and which encourage or are based around the maintenance of traditional agricultural practices ²²³ .	Often micro-reserves or parts of larger reserves, such as the Potato Park in the Peruvian Andes ²²⁴ which protects unique potato diversity ²²⁵ and Erebuni State Reserve in Armenia, which protects important crop wild relatives of wheat ²²⁶ .	Can be any IUCN Category to protect crop wild relatives, usually Category IV-VI for land-races
Protected areas where food production is carried out in traditional ways, integrated with conservation inside protected areas or in their buffer zones, often in protected landscapes ²²⁷ .	Varied examples: New Forest National Park, UK where woodland grazing maintains rich plant communities ²²⁸ , Hohe Tauern National Park, Austria, where sheep grazing conserves alpine flora ²²⁹ and Chartang-Kushkizar community conserved wetland, Iran that combines grazing and conservation ²³⁰ .	Often Category V or UNESCO MAB biosphere reserves, but can be part of more strictly protected reserves or Community Conserved Areas
Protected areas where part of the area is set aside for very specific extractive activities – usually known as extractive reserves – and the collection of a particular species or resource ²³¹ .	Many Amazonian protected areas such as Reserva de Desenvolvimento Sustentable Mamirauá, Brazil ²³² .	Usually IUCN Category VI
Protected areas where food production is carried out in non-traditional ways that are compatible with biodiversity protection.	Examples include organic agriculture encouraged within and around Category V protected areas in Italy ²³³ and forms of wild game farming in conservancies in Namibia ²³⁴	Usually IUCN Category V or perhaps VI, but could also be IV
Sustainable production systems at the edge of protected areas to provide buffer zones and / or corridors.	In Mexico ²³⁵ and Costa Rica ²³⁶ , shade-grown coffee creates corridor habitat for birds and commands a price premium. The role of sustainable production is a major component of the seven- country Meso-American Biological Corridor ²³⁷ .	Buffer zones

Protected areas can also provide rich sources of drinking water, because natural vegetation generally provides purer water. Water shortages are perhaps an even more intense problem for many people than lack of food: 40 per cent of the world's population in 80 countries face some level of water shortage²³⁸ and in urban areas alone over a billion people have no access to clean water²³⁹. Protected areas provide good sources of pure water²⁴⁰. Around 85 per cent of San Francisco's drinking water comes from the Yosemite National Park²⁴¹ and the last remaining rainforest on Singapore Island was protected because of its value as a water source²⁴². Keeping an area under forest cover is sometimes the cheapest way of maintaining high quality water and increasingly, local governments, businesses and local communities are recognising this and agreeing fees for good management through PES schemes²⁴³. For example, about 80 per cent of Quito's 1.5 million population have drinking water from two protected areas; Antisana (120,000 ha) and Cayambe-Coca Ecological Reserve (403,103 ha)²⁴⁴ and the water companies are contributing to protected area management costs²⁴⁵. The citizens of New York voted to pay for forest protection in the Catskills rather than for a new water treatment plant²⁴⁶.



Giant snails are an important source of protein for people in the area of Okomu Wildlife Sanctuary, Nigeria

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The extent to which collection of food from protected areas contributes to poverty reduction is not clear. In many cases wild collected food is a safety net, even when it is sold rather than used for subsistence, because it does not provide enough income to do more than maintain the *status quo*. Collection of water can certainly be profitable, but it is still unusual for a significant amount of these profits to reach the poorest. Farming in buffer zones and protected areas may be more significant, particularly if farmers can charge price premiums because the food comes from a protected area; but conversely these areas also often trade off some of their biodiversity conservation functions against sustainable development. There are exceptions to this general situation, some of which are touched on in the examples above; the commonest is probably when protection includes maintaining and eventually building up fish stocks through use of marine and freshwater reserves, or where profitable businesses can be built from materials collected in extractive reserves. Overall, there appear to be many opportunities for protected area managers to liaise more closely with local people in these areas.

Cultural and historical values: many protected areas – in some countries most or all such areas – also have significant historical, cultural and / or spiritual values for local communities, nations or the global community as a whole²⁴⁷. Historical values include important buildings, artefacts and archaeological remains, the continuation of traditional human cultures within a protected area, and land management systems that are themselves of important historical or cultural value. In the last two cases, protected area status is justified if long-established cultural management systems also have important biodiversity values, such as the Mediterranean cork oak forests²⁴⁸, northern European coppice management²⁴⁹ or various forms of Community Conserved Areas that mix management with conservation²⁵⁰. Some protected areas, such as the Ecosystem and Relict Cultural Landscape of Lopé-Okanda, Gabon, which is recognised as a World Heritage Site²⁵¹, have been designated at least in part because of their historical or cultural interest. Spiritual values are more complex, but can include built places of worship or much more commonly sacred natural sites (sacred groves, mountains, waterfalls etc) or pilgrimage routes that pass through protected areas. Although most commonly associated with indigenous peoples, sacred sites related to virtually all the world's major faiths exist within protected areas and thus have an influence on management²⁵². The fact that a site is sacred sometimes means that it can benefit from stricter protection, enforced by local communities, than conventional state-run protected areas, and there is abundant evidence in the scientific literature that sacred natural sites can on occasion also benefit biodiversity²⁵³. Some of the interactions are given with examples in table 8 following.

Such sites reflect in particular the broader dimensions of poverty, including the cultural and spiritual values that help bind and shape societies. In some cases, their presence can also attract tourists, pilgrims and other visitors and thus provide direct economic benefits to local communities through ecotourism, guiding or provision of accommodation and other services. Examples might include guided walks to bushmen rock painting in the Drakensberg National Park in South Africa; tourist venues based around historical slate mining sites in the Snowdonia National Park, Wales, UK; and businesses linked around Mount Fuji, an extremely important sacred site in Japan²⁵⁴. The existence of people living traditional lifestyles within protected areas can also be part of the attraction for visiting and can provide local communities with cash opportunities through sale of crafts or home-stay, such as in the case of the Maasai in Ngorongoro Crater in Tanzania²⁵⁵. Some sacred sites also make money for the local community, particularly if many pilgrims visit. The millions of pilgrims visiting a sacred shrine in Periyar National Park in India all contribute to the Periyar Foundation which supports conservation and livelihood work – gaining around US\$200,000 a year; in addition many more people have jobs relating to the

pilgrimage²⁵⁶. Income from these activities is probably lower than that made previously from smuggling and poaching, but overall quality of life is thought to have improved because villagers are no longer harassed by police or middlemen – i.e. other aspects of poverty reduction have been addressed²⁵⁷.

Table 8: **Main ways in which protected areas support cultural and spiritual values for poor people**

Link with culture and spirit	Examples	Type of PA
Protected areas containing important historical sites.	Gulluk Dagi National Park in Turkey contains Termessos, an important Roman city ²⁵⁸ the main tourist attraction. Some cultural sites also contain important areas of natural habitat, such as the City of Chichen-Itza in Mexico ²⁵⁹ .	Any protected area can contain such sites but those open for visits are unlikely in Category Ia or Ib
Protected areas containing historically important landscape or seascape management systems ²⁶⁰ .	The national park of Cinque Terre, part of the Portovenere, Cinque Terre and the Islands World Heritage Site, is a mixture of abandoned terraces on the coast of Italy, which also have high biodiversity ²⁶¹ . The site managers are currently working on increasing its biodiversity value ²⁶² .	Usually Categories IV-VI and many Community Conserved Areas
Protected area containing important human cultures. Many protected areas contain human societies.	In Australia, aboriginal people have been working with the government to self-declare protected areas within their territory, to increase levels of protection and gain other benefits ²⁶³ .	All categories are possible
Protected areas containing sacred sites – both natural (caves, groves etc) and sometimes built structures	Xishuangbanna National Park in China protects the largest area of tropical forest remaining in the country and also one of the most important sacred mountains ²⁶⁴ .	All categories are possible including category Ia for strictly protected sites

Health and recreation: perhaps the broadest category of all; protected areas help to promote health in a wide variety of ways, ranging from the protection of plants and animals of medical use through to the health-enhancing benefits of the protected area itself.

Medicines from wild plants²⁶⁵ and animals²⁶⁶ play a key role in both the development of many commercially-available pharmaceuticals²⁶⁷ and also directly through the provision of traditional herbal medicines, which are still the primary medicines for an estimated 80 per cent of the world's people²⁶⁸. One estimate suggests that up to 28 per cent of plant species have been used medically²⁶⁹.

Medicines based on wild species are also a significant source of revenue. It is estimated that global sales of pharmaceuticals based on materials of natural origin are worth US\$75 billion a year²⁷⁰ and more directly the annual reported international trade in medicinal / aromatic plants had a value in excess of US\$1 billion per year during the 1990s²⁷¹. Collection of wild medicinal species is often carried out by the poorest members of society and can be a particularly important source of income for women; for example 70 per cent of medicinal plants on the Vietnamese market originate in the uplands and are a key money-making option for poor rural women²⁷².

Such statistics and information suggest that collection of medicinal plants could be an important route for poverty reduction. However, the evidence suggests that in most cases the collectors only get a very small share of the total profits²⁷³. For example the price of *Aloe ferox* crystal after crushing and packaging was 1,700 per cent what is paid to the aloe tapper in South Africa and pharmacists add 30-50 per cent more to the price at point of sale²⁷⁴. Proper organisation can help to address some of these discrepancies if collection takes place legally and in a managed way within protected area. When local communities set up a Prunus Harvesters Union to collect bark of *Prunus africana* (used in drugs for the treatment of prostate cancer) on the slopes of Mount Cameroon, they tripled profits in the first year by providing a united front to dealers and also helped set sustainable harvesting levels²⁷⁵.



Production of herbs and medicinal plants for the local market by the village community of Topchu, in the buffer zone of the Ismailly Nature Reserve, Azerbaijan

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Tourism is growing fastest in developing countries and according to World Tourism Organisation statistics global tourism was expected to generate US\$7 trillion in 2007, rising to US\$13 trillion in the following decade²⁷⁶. Working in the tourism business has a number of benefits for the poorest members of society: e.g. it is comparatively labour intensive, with proportionately higher than average job opportunities for women and in unskilled jobs, low barriers to entry, high multipliers into the local economy, and can be suitable in remote areas with low agricultural potential. However, it is also relatively high risk and susceptible to rapid changes due to internal and external costs²⁷⁷. It is also largely dependent on cheap airfares and thus on cheap fuel prices.

Tourism, wildlife management and local communities can co-exist both within and close to protected areas if carefully planned²⁷⁸. Some examples are illustrative. In Jordan, the Dana Reserve raised US\$380,000 in tourism receipts and sales between 1995 and 1998, creating 55 jobs and increased financial benefits for over 160 people²⁷⁹. In Costa Rica, research as long ago as 1991 found that foreign exchange generated by tourism connected with protected areas generated more than US\$330 million for an outlay of about US\$12 million on management. Park-generated tourism is the second largest industry in the country²⁸⁰. In 1999, local guides from Tortuguero village in Costa Rica led 72 per cent of all night walks to see turtles nesting. The price of a tour ranges between US\$5 and US\$25, and the average visitor spends more than US\$255. The area has grossed nearly US\$7 million from the turtle tourism industry²⁸¹. In Apo Island, the Philippines, tourism is estimated to be worth around US\$500 per hectare of reef and is mixed in with community-managed fisheries agreements including controls on when and how to catch fish²⁸². In 2003, fees for watching whale sharks generated more than PHP 1.6 million (US\$28,715) for the Donsol community in Sorsogon, also in the Philippines²⁸³. Gains are not confined to the poorest countries; for example it is calculated that the presence of nesting ospreys (*Pandion haliaetus*) in Scotland bring an addition US\$7 million per year into the area as a result of nature tourism²⁸⁴.

In Serengeti National Park, Tanzania, 7.5 per cent of revenues go to local communities and in addition wildlife-related revenues, from hotel concessions and hunting fees in the adjacent game management areas, make up about 80 per cent of the annual development budgets of local districts. A fixed quota of animals for hunting by local communities is also available, which generated US\$3,500 in 1999 and a rental fee for a game camp earned US\$30,000 over five years for one village. But while these efforts have helped to change local communities' attitudes to the park, they have not sorted out the imbalances. Total wildlife-related costs in the western Serengeti are estimated at over US\$1 million a year, or US\$110 per household, while local revenues and other community benefits generated by the schemes described above are estimated at less than US\$75,000 per year, or US\$8 per household²⁸⁵.

This discrepancy is repeated in many cases. Community wildlife management schemes in the buffer zone of Royal Chitwan National Park in Nepal help local communities to make money from tourism – elephant rides to see the Asian rhinoceros and guided jungle walks – while taking pressure off the protected area itself²⁸⁶. Since it was registered in 1996, the Baghmara Community Forest User Group, in the buffer zone has earned US\$175,000 from tourism activities²⁸⁷. However, research by WWF suggests that the number of people actually benefiting

remains small²⁸⁸, despite the existence of a long-standing community project (see case study). Similarly in Madagascar's Ranomafana National Park, benefits from ecotourism have been captured by a small group of the population²⁸⁹. In Indonesia's Komodo National Park, only one per cent of income from visitors is estimated to reach local communities²⁹⁰. While many jobs are created through tourism, often unfortunately those employed are not necessarily the rural poor most in need of the jobs²⁹¹.



Tourists watching elephants at Okaukuejo water hole in Etosha National Park, Namibia

© WWF-Canon / Martin Harvey

Efforts have been made to reach a more equitable distribution of tourism benefits. For example, Kenya has in recent years earned over US\$300 million per year from tourism (much of it wildlife-oriented)²⁹² and aims to disburse 25 per cent of protected area entrance fees to communities around the park²⁹³. In the Selous game reserve, Tanzania, half the income generated (around US\$1.8 million per annum) remains with the park for management, which includes employment for rangers from local communities²⁹⁴. In the Galapagos Islands, Ecuador, visitors each pay a US\$100 entrance fee, which is divided between 8 different stakeholder groups ranging from the Ecuadorian Navy (to patrol the fishing exclusion zone) to various local community initiatives²⁹⁵. The move away from state-controlled protected areas and towards community wildlife management areas has allowed protected areas to be expanded in size in several Africa countries²⁹⁶ and has for instance led to major new approaches to protection in countries such as Namibia²⁹⁷.

In some cases sport hunting can co-exist with conservation within protected areas: hunters are prepared to pay high fees and sport hunting organisations can afford to pay guards to maintain stable populations of key species. For example, 80 per cent of the protected areas in Tanzania allow controlled sport hunting, including 43 Game Control Areas and 23 Game Reserves, which together make up 22 per cent of the country's mainland. Botswana has similar areas available for hunters²⁹⁸. In Pakistan, the Chitral Conservation Hunting Programme exists within the Chitral Gol National Park; between 1983 and 1991 (when game hunting was much more strictly curtailed) 16 Pir Panjal markhor (*Capra falconeri cashmiriensis*) were taken in and around the national park, generating approximately US\$250,000 in revenue, although apparently this did not go to either conservation uses or the local community²⁹⁹. WWF has a position on trophy hunting and conservation which, amongst other things, stresses the importance of returning revenues to local communities³⁰⁰.

The Lupande Game Management Area in Zambia brings in revenues of about US\$230,000 per year from hunting concessions. In the past this money was not well distributed amongst the 50,000 residents but changes in policy and a more transparent process mean that 80 per cent of the money now devolves to village level, with people giving a proportion to community projects and retaining the rest for themselves. One result is a changed attitude to the value of the wildlife and a reduction in poaching³⁰¹.

Knowledge: protected areas provide resources for research, including utilisation of traditional knowledge; formal and informal education; and prime sites for bio-prospecting and for the collection of genetic materials.

Protected areas are often the first choice for research by ecologists, because many are in a more-or-less natural state and there is also a reasonable guarantee that populations or habitats will remain undisturbed. Some protected areas have been established primarily as research sites³⁰² and regions or countries have also dedicated certain reserves specifically to form networks for long-term research³⁰³. Protected areas are also useful in

providing baseline data for climate change studies. However, while these sites certainly do provide employment opportunities they are primarily for scientists and technicians rather than for the poorest members of society. Some protected areas do provide conditions in which traditional knowledge survives and this can sometimes have economic or other material benefits, for example if local peoples are able to capitalise on traditional medicinal plants, but despite the best efforts of the CBD success rate has been low.

Many protected areas are also primary sites for education. Urban reserves and those near centres of population are particularly important³⁰⁴ although an increasing number of schools and colleges also run trips to natural areas further away. Many protected areas in developing countries report that while in the past visits were mainly from outsiders, today an increasing number of visits are coming from schools within the country. In Madagascar, for example, in the recent past 90 per cent of visits to national parks came from foreign tourists whereas now most come from local Malagasy people, including many school students³⁰⁵. Although the immediate, direct economic benefits of such visits are limited, the long-term implications in terms of increased understanding of natural systems, biodiversity and natural heritage are considerable. A paper from the Commonwealth of Australia points out that *“Repeated field surveys by student classes over many years can provide good information about long-term change that cannot be obtained in any other way. Participants in these activities are also more likely in later years to be informed contributors to future decisions about marine environments and resources”*³⁰⁶.



A local staff member from Dayak Kenyah working on insect specimens, at Lalut Birai Research Station, Kayan Mentarang National Park, East Kalimantan, Indonesia.

© WWF-Canon / Tanyo Bangun

Bio-prospecting refers to the search for naturally occurring biochemical compounds of potential scientific or commercial value. In the past bio-prospecting was poorly controlled and in many cases individuals or companies simply removed material and used it without compensation or payment to the communities who were managing the land or the nation in which it was found³⁰⁷. The CBD was established in part to address these problems and to give in particular developing countries greater security over their own genetic resources³⁰⁸. In the years since, several countries have developed agreements with bio-prospecting companies³⁰⁹. The best known is the agreement between the National Biodiversity Institute (INBio) of Costa Rica and Merck, an international pharmaceutical company, which grants Merck access to natural material from which compounds are extracted and screened using various bioassays. INBio coordinates survey and collection. Merck pays money to INBio, which in turn pays a proportion to the running of Costa Rica's protected area system. INBio has a series of other agreements with companies. Shaman Pharmaceuticals focus on drugs from species that indigenous peoples believe to have medical properties and provides funds directly to indigenous peoples and protected area agencies. Andes Pharmaceuticals also works with indigenous peoples and in addition invests in developing screening capacity in-country³¹⁰. All of these schemes have their critics and in many cases it is still too early to see the extent to which they deliver results, but they also all show attempts to channel some of the profits from biodiversity prospecting directly to poor people.

Environmental benefits: some of the largest global goods and services from protected areas come from the ecosystem services that they provide in terms of clean water, stable soils, buffering against natural disasters and carbon sequestration to mitigate climate change. The economic benefits of these services are increasingly recognised, although the specific role of protected areas is not always separated from the general value of ecosystems. For instance, one well known review estimated that coastal ecosystems provide services worth over

US\$4,000 per ha per year, while tropical forests are valued at US\$3,000, wetlands at nearly US\$15,000, and lakes and rivers at US\$8,500³¹¹. A report for WWF estimated that coral reefs provide almost US\$30 billion per year in net benefits in goods and services to the world economy, including US\$9 billion in coastal protection³¹². A 2004 task force report to the China Council for International Cooperation on Environment and Development estimated that the economic value of ecosystem goods and services in China is more than 30 per cent of national GDP, with much of this being linked to protected areas and their management³¹³. Calculations are complex; in the research for this chapter it is notable to see the number of lengthy studies of national environmental benefits that do not, in the end, come up with any figures! At present it is enough perhaps to note that the benefits are being increasingly recognised as substantial, often outweighing the costs of conservation.

Most studies look at specific biomes or ecosystems. Forests can reduce rate of run-off, soil erosion and sedimentation in water and filter contaminants³¹⁴, while forest loss can conversely impact on aquatic productivity³¹⁵. Links between forests and flood control are more ambiguous. Forests generally reduce total annual water flow in a catchment compared with other land uses³¹⁶; although they are unlikely to be sufficient themselves to prevent occasional, catastrophic flooding³¹⁷, they will frequently reduce minor or localised floods³¹⁸, which can itself have major effects. Restoration of forests in the watershed above Malaga, Spain, ended the flooding that had been recorded at regular intervals over 500 years³¹⁹. The benefits from these environmental services are increasingly being recognised³²⁰.

Forests also sequester carbon and can help mitigate climate change; forest loss conversely adds a considerable amount of carbon dioxide into the atmosphere every year. Recent research shows that tropical deforestation releases almost 20 per cent of global carbon dioxide emissions – some 1.5 billion tonnes of carbon every year – releasing an estimated 87 to 130 billion tonnes of carbon by 2100 unless rate of forest loss is decreased³²¹. Protected area agencies are increasingly recognising the potential of capitalising on the carbon locked in their forests as a means of securing finance, through the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC) and through various voluntary agreements. In a recent report the World Bank estimated that deforested land worth US\$200-500 per hectare as pasture could be worth US\$1,500-\$10,000 if left as intact forest and used to offset carbon emissions³²². This approach has fierce critics³²³, but is increasingly being seen as a potential source of income for protected areas, and for poor communities outside protected areas³²⁴, although it is widely recognised that more consideration is needed about how carbon markets might benefit the poor³²⁵. However to date, few initiatives have considered governance issues and the rights of poor local people. Lessons can however be learned from projects such as that taking place in the N'hambita community in the buffer zone of the Gorongosa National Park, Mozambique, which aims to improve livelihood by introducing agroforestry systems that provide income from carbon finance and a range of other benefits such as fruit, timber, fodder, fuelwood and improved soil structure^{326, vi}.

A review of marine ecosystem services found that natural features like coral reefs and mangroves are often the most cost-effective option for protecting coasts, not easily substituted by artificial reefs and seawalls or by aquaculture³²⁷, thus increasing the cost effectiveness of options such as restoration of mangroves³²⁸. At their most effective mangroves can absorb between 70 and 90 per cent of the energy of wind-generated waves³²⁹, and the economic value of these resources has been calculated for various countries. A study in Indonesia, for example, worked out the erosion control value of mangroves as being equivalent to US\$600 per household per year³³⁰. Research in Bangladesh concluded that the absence of the Sunderbans mangroves, currently protected in three wildlife sanctuaries, would mean building 2,200 kilometres of cyclone/flood embankments with a capital investment of US\$294 million and a yearly maintenance budget of US\$6 million³³¹. Despite protection, they have been degraded³³², although there is now increasing experience with restoration, for example on Sagar Island³³³.

^{vi} While conceding that forest sinks could play a certain role when managed carefully, WWF is opposed to using forest sinks under the Kyoto Protocol because of their uncertainty and the risk of taking attention away from the need for emission reductions. However at the 9th Conference of Parties of the UNFCCC, limited forest sinks were agreed and WWF is now trying to ensure that model sinks projects are designed and managed in appropriate ways.

Some studies, for instance, suggest that non-consumptive economic benefits from marine protected areas are greater than other benefits forgone³³⁴. Research suggests that throughout the Indian Ocean, healthy coral reefs were better able to withstand the force of the 2004 Tsunami than those that had been degraded and may also have afforded better protection³³⁵. IUCN has valued coastline protection and other services provided by coral reefs in the Indian Ocean at over US\$1.5 billion a year³³⁶. Net ecosystem service value tends to decline with biodiversity and ecosystem loss, so protected areas can help to maintain such services³³⁷. Some examples of how these benefits are being supplied by protected areas are given in table 9 below.

Table 9: **Environmental benefits from protected areas**

Environmental service	Examples
Providing clean drinking water supplies by using forests as a filter ³³⁸ .	Two national parks, Gunung Gede Pangrango (Category II, 15,000 ha) and Gunung Halimun (Category II, 40,000ha), protect watersheds which supply water to Jakarta, Indonesia ³³⁹ . Fourteen protected areas and the Atlantic Rainforest Biosphere Reserve help to protect water sources for Rio de Janeiro, Brazil ³⁴⁰ .
Regulating water flow	Forests usually decrease water flow compared with other forms of vegetation. An exception occurs in tropical cloud forests, which intercept and concentrate water ³⁴¹ . The cloud forests of La Tigra National Park (23,871 ha) in Honduras provide more than 40 per cent of the annual water supply to the 850,000 people of the capital city, Tegucigalpa ³⁴² ; this was a major incentive for their protection.
Reducing flood damage	The Mamirauá Sustainable Development Reserve is an area of flooded forest (<i>várzea</i>) in the Brazilian Amazon, with about 1,800 people living inside, and twice as many classified as “resource users”. The area helps to absorb flood waters. It is also exceptionally rich in biodiversity, including over 400 fish species. Under a series of agreements, local people benefit from the reserve through community fisheries and forest management, and ecotourism ³⁴³ .
Protecting coastlines	The marine protected area at Hikkaduwa in Sri Lanka saw less damage from the 2004 Tsunami than surrounding areas because coral was in good condition ³⁴⁴ . The Sundarbans protected area system in Bangladesh reduces flood damage throughout low-lying parts of the country.

The importance of many of these services is likely to increase under conditions of rapid climate change³⁴⁵. Although the case for the value of ecosystem services is now generally accepted, the links with poverty reduction are, as is the case with virtually everything discussed here, more complex. Some research suggests that marketing ecosystem services has been more cost-effective in protected areas than outside, but only because opportunity costs are reduced and local communities excluded from the decision-making process³⁴⁶. Currently people living far from a protected area, in large cities for instance, may unknowingly be reliant on a poor rural community near a protected area, who are managing that land in a suitable fashion to ensure that it continues to provide benefits to those external users.

In the search for more equitable approaches, payments for environmental/ecosystem services (PES) are increasingly being promoted as a means to reach greater equity between those protecting a site and those benefiting from its protection. Payments for environmental services ensure that the stewards of a protected area (or any other land managed for ecosystem services) are duly compensated by those benefiting from their wise management. For example, in Guatemala’s Sierra de las Minas, a pioneer PES scheme has been set up whereby industrial users of water downstream compensate upland farmers for protecting the watershed³⁴⁷. The advantage of PES over compensation or grants is that they may be a long term and sustainable solution. In addition, they bring protected areas (or other areas) into a market-based system which may thus prove more sustainable than subsidies, one-off payments or grants. In reality PES is relatively new and there are few definitive examples for a scheme that is increasingly being promoted as the ultimate ‘win-win’ solution. Much more experience is needed to test such a mechanism fully.

It should be noted that many local communities carry out their own protection of environmental services as part of their general land management, providing security for other livelihood activities. Watershed protection is one of the commonest motivations for the development of Community Conserved Areas by local communities. For example several dozen villages in the arid state of Rajasthan, India, have restored and conserved forests in watersheds to protect water flow in the River Arvari³⁴⁸.

Materials: most of the people who rely on natural systems for food will also be collecting other materials such as building materials, fuel, adhesives and so on. Many of these are often lumped together under the term non-timber forest products (NTFPs) although similar products are found in other biomes. NTFPs often include food products, so there may be some duplication in statistics below.

In developing nations, some 2.4 billion people – more than a third of the world population – rely on wood or other biomass fuels for cooking and heating³⁴⁹ and this is also increasingly seen as a source of income³⁵⁰. In Kenya, the charcoal economy is estimated at about 23 billion Kenyan shillings per year (over US\$350 million) which is on a par with tourism as an income generator³⁵¹. Although sometimes the environmental impacts of collection have been exaggerated³⁵², poor management of fuelwood resources can certainly lead to localised impacts³⁵³, particularly in dry forests³⁵⁴.

An increasing number of protected areas allow access to timber, non-timber forest products and other materials so long as the species involved are not threatened by the process: indeed protected areas are being established in joint ventures between local communities and conservation bodies with sustainable off-take as an underlying principle. For example the Kayan Mentarang National Park in Indonesian Borneo is home to 16,000 Dayak people who retain rights to collect rattan (*Calamus* spp.), sang (*Licuala* spp.) and hardwoods for construction, under guidelines that are controlled by customary law³⁵⁵. Many of these products are used for subsistence purposes but some also have a significant market value. The value of annual trade in NTFPs globally is estimated at US\$15 billion and the value of trade in wild resources generally, including fish and forest products, is estimated at US\$160 billion a year³⁵⁶. The highest value products tend to be managed more intensively, by specialised producers, than lower value, less intensively managed products³⁵⁷. Many NTFPs are labour intensive and require few skills and little capital, making collection attractive to the poorest, but they also frequently have poor prospects for market or price growth, making them a safety net rather than a means of poverty reduction³⁵⁸. There are exceptions to this general rule.

Some examples illustrate a general phenomenon. On Mexico's Yucatan peninsula, the market value of palm thatch sold as roofing material is estimated at US\$137 million per year³⁵⁹. In India, NTFP production contributes about 40 per cent of total official forest revenues and 55 per cent of forest-based employment³⁶⁰. In Botswana, the value of NTFPs exceeds that of timber³⁶¹. As noted in Chapter 4, a meta-study of 54 cases of income generation amongst people living near or in forests found that forests provided important resources at every income level and on every continent, providing an average of 22 per cent of total income – the equivalent of US\$678 per household per year (adjusted for purchasing power parity)³⁶². Wild food and fuelwood were found to be by far the most important resources. In some alpine villages in the Western Himalayas, wild products provide around 70 per cent of household income, mostly from grazing of sheep and goats and the collection of medicinal plants and herbs³⁶³.



Areas subject to flooding are used for grazing cattle on the shore of Tonga Lake in El Kala National Park, Algeria

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One of the complicating factors in assessing the importance of collecting wild materials in protected areas is that these activities are often used as a safety net in case of sudden need – for example because crops fail³⁶⁴, and are seldom the main source of income³⁶⁵, creating less of an incentive to develop sustainable harvest techniques. Analysis of 55 case studies suggests that collection from the wild seldom creates enough surplus wealth to invest in management or cultivation, but also tends to deplete the resource³⁶⁶.

Homelands, security of tenure: population displacement from protected areas has become a major focus for discontent and created calls for changes in procedure³⁶⁷. In fact, many protected areas still contain human populations, officially and unofficially; for example it is estimated that 80 per cent of the protected areas in Latin America contain settled human communities³⁶⁸. Over the past decade, extensive efforts have been made to address the rights of people who have traditionally lived in or near protected areas with a series of guidelines agreed by various NGOs³⁶⁹ and also negotiated under the auspices of the CBD³⁷⁰. These new approaches to protection have changed attitudes in some but not all countries and under certain conditions indigenous people also see the declaration of a protected area as a way of guaranteeing their own rights to land, as has happened for example in Australia³⁷¹ and Finland³⁷²; in other cases co-management approaches have devolved some or all the responsibility for management to local communities³⁷³. In these cases, the issue is less about money earned but rather about maintaining tenure and providing security for communities that often have few other options and face serious social disadvantages.

Lack of secure tenure can also lead to problems for protected area managers. For example, in the Rio Platano Biosphere Reserve in Honduras, unresolved indigenous land tenure issues have made participation in protected area planning difficult, since there is limited incentive for local people to use the resource base sustainably. In El Triunfo Biosphere Reserve in Mexico however resolution of land tenure issues has greatly facilitated collaboration between the local community and protected area managers³⁷⁴. In the Philippines, in the Kitanglad Range Nature Park, Garrity et al³⁷⁵ also found that *“the foremost policy issue impinging on local natural resource management systems is the reality of overlapping land rights and management priorities.”*

How do benefits from protected areas reach poor people?

The previous few pages have provided a rapid skim through the types of benefits that protected areas provide, which may in both theory and practice have an impact on poverty reduction programmes. But these are still merely a set of snapshots, and an overall figure for the extent to which these really impact on the lives of poor people remains an elusive goal.

Clearly not all benefits reach people in the same way; nor do they have the same implications for protected areas. It is possible to categorise the ways benefits from protected areas reach poor people as follows:

- ✓ Collected or harvested directly from the protected area – for example NTFPs
- ✓ Derived directly from the protected area – for example jobs in the protected area
- ✓ Derived indirectly from the protected area – for example hospitals set up thanks to funds raised by the protected area or subsidies for the protected area and its surroundings
- ✓ Empowering and engaging poor people – for example through co-management of the protected area.

Figure 3 overleaf illustrates these different ways in which the benefits from protected areas can be translated into poverty reduction. We also know that conditions will vary around the world. A skilled wood carver using native materials in Namibia, for example, can earn as much as US\$1,800 per year by plying the tourist trade. In general, however, wild income contributes more modestly to total income, providing perhaps 15–40 per cent of family income, if current studies are any guide³⁷⁶. In other situations the benefits will simply be a safety net that never provides enough surplus income for people to build up capital or even non-monetary resources and relying on goods from natural ecosystems can act as a kind of poverty trap.

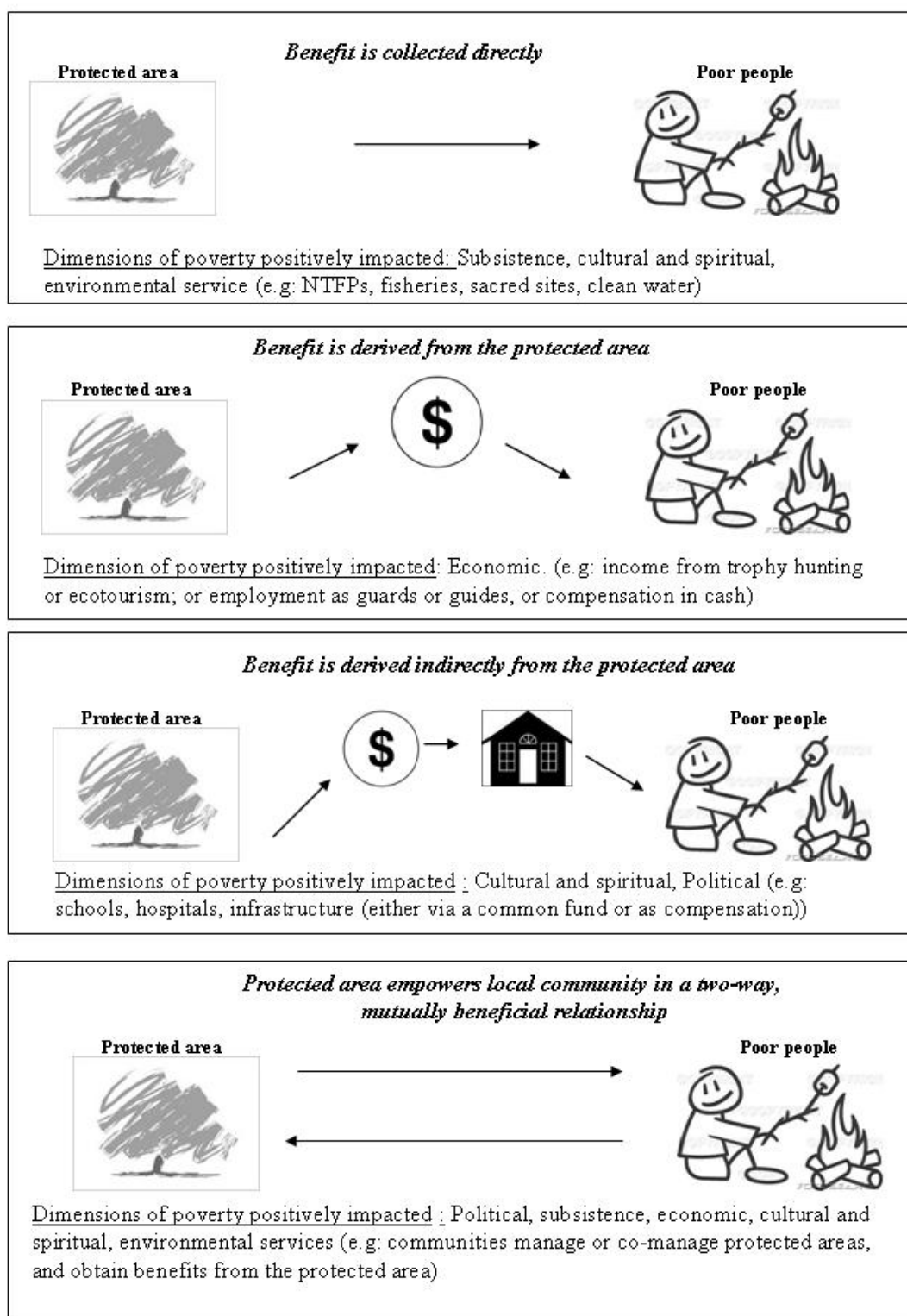


Figure 3: Translating benefits from protected areas into poverty reduction

We also need to be very cautious in extrapolating from case studies. The fact that one protected area makes good money from ecotourism for instance does not mean that this option applies equally to every protected area, nor that ecotourism will necessarily last forever – tourism being highly dependent on fashion, cost and political stability. The same will be true for any payment for environmental services scheme (which usually needs a particular set of social and economic conditions to function effectively) and for sale of NTFPs. Other income

generating activities such as collection of medicinal products often only last until the recipient company finds a cheaper way of manufacturing the same chemicals. Several reviews urge caution in this respect and for example an analysis from the World Bank found that the value of tropical forests in terms of hydrological services and NTFPs is very variable³⁷⁷.

Individual case studies can also be dangerous because they often draw on specific projects and there is no guarantee that what works with dedicated project personnel will necessarily spread out of its own accord into surrounding communities. Some ideas get taken up very quickly and others not. In a study of the impacts of community forestry in Nepal the authors found: “...*some clear empirical evidence through case studies, that community forestry has provided some tangible benefits to poor people. The evidence is, however, limited to a few cases and there is no clear evidence of scaling-up*”³⁷⁸.

What the evidence drawn together in this chapter shows is that some – although not all – protected areas contain resources that can be managed to deliver benefits in terms of poverty reduction. The examples also suggest that this can often be achieved, as long as sufficient care is taken, without necessarily undermining the reasons for setting up the protected area in the first place. But ‘win-win’ situations are not invariably possible and delivering social benefits may also mean trading off some of the biodiversity benefits and vice versa; thus creating the need for societies to make choices about priorities. Protected areas also often carry significant costs and an accurate picture of their role in poverty reduction strategies needs to look at net benefits, rather than selecting individual gains without considering the losses; unfortunately data of this complexity are still rare.

In a world where protected areas are under increasing pressure to demonstrate multiple values, managers are faced with a two step process:

- ✓ Developing ways of capitalising on protected area resources that do not undermine the natural values that the area was established to preserve
- ✓ Ensuring that at least some of the benefits that accrue reach the poorest members of society

Both of these are large tasks and to some extent cannot be tackled by protected area managers on their own, but need to be situated in a wider framework of adequate policy and legislation and good governance. We return to these issues in the conclusions.

Chapter 6: Linking effective protected area management with poverty reduction

It is generally recognised that well-designed and managed protected areas can provide major direct and indirect benefits to local and national economies

Jeff McNeely et al, *Friends for Life: New partners in support of protected areas*, IUCN

Well-managed protected areas can potentially be successful in achieving a wide range of objectives, from conserving endangered species to contributing to the well-being of local people or providing pleasure and excitement to an increasingly well-travelled proportion of the global community. Badly managed protected areas can disappoint on all these counts³⁷⁹.

In the earlier chapters of this report we have highlighted the many complexities in trying to make the links between poverty reduction and conservation through protected areas. We have discussed different opinions about what characterises poverty and well-being and the role protected areas can play in a whole range of values that relate to well-being.

But as we have also pointed out, there are major challenges in monitoring the impacts of protected areas on well-being and poverty reduction. In this chapter we take a step sideways to consider the link between the quality of protected area management and the improvement of human well-being. To do this we review data from an on-going research project to extract information on the links between protected area management and its effectiveness, and in particular the delivery of poverty reduction and human well-being objectives.

Assessing management effectiveness

In recent decades there has been a steady rise in interest in assessing the effectiveness of protected area management. Individual studies on effectiveness have been undertaken for at least twenty years, often by non-governmental organisations or research bodies but also sometimes by park agencies themselves. However, until recently there have been few efforts to look at all aspects of protected area activity, i.e. from management approaches to the final outcomes in terms of biodiversity conservation and the achievement of diverse objectives, and certainly little attempt to involve a range of stakeholders in such assessments³⁸⁰.

The IUCN World Commission on Protected Areas (WCPA) established a task force on management effectiveness in 1997. After much research and several workshops the task force developed a six-part assessment framework, initially published in 2000 and revised in 2006³⁸¹, to guide management effectiveness evaluations. The framework views management as a process or cycle of main elements (indicated in *italics* in the next sentence). Management thus begins with establishing the *context* of existing values and threats, progresses through *planning* and the allocation of resources (*inputs*), and as a result of management actions (*processes*), eventually produces goods and services (*outputs*) that result in impacts or *outcomes*.

Global management effectiveness data^{vii}

The WCPA framework has become the 'backbone' for the variety of evaluation systems which have been developed to assess management effectiveness at site or system level across a range of biomes, regions and types of protected area. The unity provided by the framework has also allowed researchers to assemble and analyse the various studies of management effectiveness undertaken.

^{vii} This chapter is based on work undertaken as part of the Global Management Effectiveness Study at the University of Queensland. Contact Dr Marc Hockings (m.hockings@uq.edu.au) or Dr Fiona Leverington (Fiona.leverington@uq.edu.au) for more details.

Over 5,500 individual protected area effectiveness assessments (carried out in some 5,000 protected areas) have so far been collected and where possible their results are being recorded on a database compiled by researchers at the University of Queensland (Australia). Assessments have been carried out in over 100 countries using some 50 different evaluation systems, the majority of which were either developed using the template provided by the WCPA framework, or can easily be synchronised with the elements of the framework³⁸².

The results from this global study provide the first opportunity to review management effectiveness across a reasonable proportion of the world's protected areas and to look for trends over a whole range of management issues. While the main aim of this particular study is not to examine poverty and protected areas, the fact that some indicators relate to elements that contribute to poverty reduction means that we can use these data for our purposes. To make such a global analysis possible a common reporting format of 'headline indicators', organised around the WCPA framework, has been developed following a review of the over 2,000 questions and indicators found in the different evaluation systems. The common reporting format is thus intended to:

- ✓ represent most indicators found in any protected area management effectiveness methodology
- ✓ provide a platform for cross-analysis of results from management effectiveness studies using different methodologies, while maintaining as much information as possible³⁸³

A sample of the 'headline indicators' considered for this analysis is shown in table 10, with those of some relevance to human well-being highlighted in bold and detailed further in this chapter.

Table 10: **Some examples of 'headline indicators' used to compile results from different methodologies (extracted from the management effectiveness common reporting format)**

Framework element	Common reporting format 'headline indicators' ^{viii}	Explanation
Context	Level of significance	Derived from indicators which estimate the relative importance of the protected area
	Constrained or supported by external political and civil environment	The extent to which the protected area has positive support from institutions and community
Planning	Management plan	Existence and other features (e.g. currency, usefulness) of management plans
Input	Adequacy of staff numbers	Extent to which needed human resources are available
	Adequacy of current funding	Extent to which necessary financial resources are available
	Adequacy of infrastructure, equipment and facilities	Extent to which the physical resources needed for protected area management are available
	Adequacy of relevant and available information for management	Extent to which information resources are available
Processes	Effectiveness of administration including financial management	Ratings of how well administration functions for protected area management
	Adequacy of law enforcement capacity	Extent to which law enforcement takes place relative to the need for this activity
	Appropriate programme of community benefit/ assistance	The extent to which programmes appropriate to the protected area are conducted
	Communication programme	Rating of communication programme and its features
	Involvement of communities and stakeholders	Combination of any indicators concerned with community consultation, participation and involvement
	Visitors catered for and impacts managed appropriately	The extent to which visitors are well managed and provided for
Outputs	Results and outputs have been produced	Rating of how well targets have been met

^{viii} Note that these 'headline indicators' are not the questions used in any method but a grouping of similar questions across different methods

Framework element	Common reporting format 'headline indicators' ^{viii}	Explanation
Outcomes	Conservation of nominated values – condition	Scoring of the protection of natural (and sometimes cultural and other) values of the protected area
	Effect of park management on local community	Extent to which the protected area is perceived to bring positive benefits to the local community

This growing data set allows for considerable analysis of a wide range of indicators relating to protected area management. For the purposes of this report we have worked with the University of Queensland to analyse the data relating specifically to social benefits and stakeholder relationships. While this data set is unique, it remains difficult to rate the quality of all the data over such a large number of assessments. We have reviewed where possible the reports published as a result of the assessments, although for individual indicators it remains impossible to know the sources used when making the assessment (i.e. research and monitoring, expert knowledge or best guess)³⁸⁴. The assessment systems included in the study also vary greatly, from the in-depth assessment system developed for natural World Heritage sites, which has 12 separate assessment tools completed through a mix of research, analysis and stakeholder meetings/workshops³⁸⁵, to the 'quick to complete' 30 multiple choice questions which make up the core of the Management Effectiveness Tracking Tool³⁸⁶ developed to track progress in management effectiveness across the WWF and World Bank protected area portfolio. Nonetheless, the global study is developing the largest data source in the world on management effectiveness of protected areas and should give us at least some first approximations of the relationship between protected areas and benefits to local stakeholders. Importantly, it also provides a more analytical basis for further investigation of those protected areas which do appear to be making a positive contribution to poverty reduction and overall well-being.

Analysing management effectiveness data

The studies used for this analysis have assessed various factors of management effectiveness using scoring systems, where people involved in protected area management have chosen an option (from a selection of four or five) that most closely matches the situation they perceive in that protected area. Usually the lowest-scoring option is the complete absence or near absence of progress or performance in relation to that factor (for example, there is no management plan at all or there is no communication programme), the middle scores show some progress (e.g. a partly completed or very old management plan, or a sporadic, poorly resourced communication programme) and the highest-scoring option is approaching an ideal situation *for that protected area*: (e.g. a recent, useful management plan or a regular, planned, well-executed communication programme). All management effectiveness results have been entered into the global database using a common zero to ten scale. This is achieved by simply reflecting the existing scoring of the individual method and mapping the scores to the corresponding point on a scale between zero (lowest) and ten (highest). In this way, the integrity of the original scoring system is not changed.

To compare indicators and questions across different methodologies, individual indicators from the various management effectiveness systems have been numbered, mapped and allocated to a particular 'headline indicator' (such as those shown above in table 10) in the common reporting format^{ix}.

Although, as noted above, researchers have tracked down over 5,500 individual assessments of management effectiveness of protected areas: to date the results of only 1,700 assessments have been entered and analysed in the global database and of these just over 1,200, representing the most recent studies for each protected area^x, are discussed in this chapter. Not all assessments have information relating to each indicator.

^{ix} A 'weighting' sheet has then been developed to create a matrix which shows how each indicator maps to a headline indicator. Where there is one indicator to a headline indicator, then the weighting is one. Where there are more than one, then the weighting is usually one divided by the number of 'contributing' indicators but may differ if questions differ in importance.

^x Where repeated assessments have been conducted in a protected area, only the most recent assessment is considered in this analysis.

Table 11 gives details of the methodologies assessed here and the regional coverage of the data. Most of the data have been obtained from two of the generic methods applied widely across the world: RAPPAM (Rapid Assessment and Prioritisation of Protected Area Management)³⁸⁷ and the Management Effectiveness Tracking Tool³⁸⁸. To date these have mostly been used to assess the effectiveness of protected areas in countries outside the most highly developed regions (for example, no assessments used in this analysis have come from Western Europe, The United States, Canada, Australia, New Zealand or Japan – these areas have tended to develop country specific assessments, the data for which will also eventually be collected and added to the Global Study where possible). Assessments using the Tracking Tool are a requirement for project funding from the World Bank and from the Global Environment Facility (GEF). In addition, information is provided from over 300 assessments from Panama and Costa Rica using the PROARCA/CAPAS method, which has been applied over seven years across Central America; from MEMS a methodology from Bolivia; and AEMAPPS^{xi} from Colombia³⁸⁹. The Parks in Peril Scorecard has been applied over a seven year period across the 37 ‘Parks in Peril’ throughout Latin America and the Caribbean region³⁹⁰.

Table 11: **Management effectiveness methodology and regional coverage of results**

Methodology (see discussion below)	Number of assessments carried out and assessed in the analysis below (organised by UN region)					
	Africa	Asia	Europe	Latin America/ Caribbean	Oceania	Total
AEMAPPS				43		43
MEMS				18		18
Parks in Peril				71		71
PROARCA/CAPAS				336		336
RAPPAM	6	94	204	15	36	355
Tracking Tool	70	130	123	72	3	398
Total	76	224	327	555	39	1221

Of the 1,221 assessments analysed, 2 per cent were conducted in countries with a ‘low’ Human Development Index (HDI), 60 per cent are categorised as ‘medium’ and the remainder are ‘high’ (see Chapter 4 for more details of the HDI). It might generally be assumed that countries with lower HDIs would have less capacity to manage protected areas than those with a high HDI. However, this assumption may not always be true when it concerns community relations, as developing countries may give community relations a higher priority, and there are more likely to be externally funded projects allowing for better involvement of local people.

Management effectiveness indicators relating to poverty/well-being

The results for the ‘headline indicators’ extracted from the common reporting format (see table 10) which relate most closely to social issues, and thus well-being, within protected areas have been analysed for this report (so far, the global study has recorded over 80 different questions from 22 methods which relate to the involvement of communities and stakeholders)³⁹¹. One of these indicators relates to outcomes, while the remaining three to process. Results are reported as an average for each indicator.

✓ Effect of park management on the local community (outcome indicator)

The ‘headline indicator’ on the effect of park management on the local community summarises the data from 1,003 assessments which include questions relating to the effect of the protected area on the local community. These assessments are from the Tracking Tool, RAPPAM and PROARCA methodologies.

^{xi} This methodology can be translated as ‘Management Effectiveness Evaluation of Protected Areas with Social Participation’

For all these studies, there was an average score of 6.4 out of a possible 10 (standard deviation 3.0^{xii}) indicating positive but not excellent performance in relation to this aspect of protected area management. The majority – nearly 75 per cent of assessments – reported that the protected area had an acceptable to positive effect on the local community (i.e. the assessment results were 5 or more out of 10). Only 5 per cent of responses scored less than 2.5 out of 10. Of course this information is at a fairly coarse scale, however these results do indicate that for the subset of protected areas reported here there is a widely held *opinion* that the existence of the protected area brings a net benefit to the communities. These issues are discussed in greater detail in the case studies in the next chapter.

✓ **Involvement of communities and stakeholders in protected area management (process indicator)**

The picture becomes richer when the three ‘process’ indicators are also analysed. The first is the indicator relating to involvement of communities and stakeholders in protected area management. Almost all evaluation methodologies include questions relating to this indicator, and the 1,001 assessments used in this analysis were obtained from all six of the methods listed above. Some methods, such as the AEMAPPS method used in Colombia, ask multiple questions relating to community participation.

Building support from local communities

Building a supportive local constituency integrates protected areas into the lives of local society as well as those of people living far beyond a site. Many types of management and advisory committees exist, ranging from support committees (‘Friends of the Park’) to formal representative councils designed to ensure broad participation. As of 2002, 25 of the 37 Parks in Peril sites had established management committees that supported participatory management processes for the site. All sites where such committees were part of the conservation strategy had at least begun the process of winning stakeholder confidence to participate in site management³⁹².

The average score for this indicator is below the ‘acceptable’ level, at 4.6 out of 10 (standard deviation 2.3). Assessments for two of the methods (Parks in Peril and PROARCA) average exactly five out of 10 for this indicator: in both of these cases the results are the latest scores where a series of assessments have occurred over time and extensive management improvement programmes have been undertaken. The scores for this indicator have improved over progressive assessments. The results show however that there is still considerable work to be done by protected area managers in including local communities and stakeholders in management.

✓ **Communication programmes (process indicator)**

For the indicator on communication programmes, only those for the RAPPAM methodology are considered here as this is the only method analysed to include questions specifically on communication with local communities.

Assessing effective communication

An assessment of 110 protected areas under the control of KwaZulu-Natal (KZN) Wildlife in South Africa, using the RAPPAM system, found that half of the respondents were of the opinion that there was not effective communication with local communities regarding protected area management. Over 100 KZN staff members took part in the assessment workshops including the regional head, the sub-region head or chief conservator, protected area managers (conservators and wardens) and the district and community conservation officers³⁹³.

The 356 assessments scored an average of 4.3 out of 10 (standard deviation 2.7), with exactly half falling at five or more out of 10. Again, it was felt in most assessments that this aspect of protected area management required considerable improvement.

^{xii} The standard deviation indicates how widely the values in the data are dispersed: the bigger the standard deviation, the wider the range of values.

✓ **Community benefit or assistance programmes (process indicator)**

The final analysis assesses the extent to which community benefit or assistance programmes appropriate to the protected area are conducted within or adjacent to the protected area. These assessments are reported only for the Tracking Tool and averaged a very low 3.2 out of 10.

Correlating indicators relating to poverty/well-being

The correlations between various common indicators of management effectiveness (i.e. the extent to which the values of an indicator vary in synchrony with another indicator) were also examined^{xiii}. Table 12 below shows the correlation between the outcome indicator ‘effect of protected area management on local community’ and a number of other headline indicators.

Table 12: **Management effectiveness indicators and correlations**

‘Headline Indicator’	Correlation with indicator on the ‘effect of protected area management on local community’
Visitors catered for and impacts managed	0.40** (716)
Communication programme (note this is all communication, not just to local communities)	0.33** (1068)
Management plan	0.31** (1071)
Adequacy of law enforcement	0.28** (1071)
Involvement of communities and stakeholders	0.25** (874)
Appropriate programme of community benefits	0.22** (329)
Adequacy of relevant and available information	0.15** (1067)
Adequacy of staff numbers	0.13** (1066)
Adequacy of current funding	0.13** (1062)
Effectiveness of administration	0.10 (1071)
Adequacy of infrastructure, equipment and facilities	0.05 (1063)
Conservation of nominated values – condition	0.03 (444)

** Significant at $p < .0001$. Numbers in brackets represent sample size.

It would be expected that some correlations would be seen between many of the elements being assessed, as the best managed and resourced protected areas are more likely to score well in most of the indicators. However, it is interesting that the six indicators correlating most strongly (i.e. those indicators with the highest correlation figures in the table above) with the outcome indicator ‘effect of the protected area on local communities’ are:

- the ‘process’ indicators with a social content (which are discussed above), i.e. communication programme, involvement of communities and stakeholders and appropriate programme of community benefits
- management planning
- law enforcement
- visitor management

This might indicate that protected areas where there is effort being put specifically into community relations, outreach and support are achieving positive outcomes in providing more benefits to local community. Management planning often involves community participation, and both law enforcement and visitor management involve relating to people in ways that can (but do not always) benefit local communities, so these strong correlations are also interesting. These relationships are clearly stronger than the correlations with factors of resourcing alone (staff, infrastructure and equipment, and information) and other management processes.

^{xiii} Correlation measures the strength and direction of a relationship between two sets of variables (such as two different indicators). That is, the more strongly they are positively correlated, the more you will expect that as one increases, the other one will increase too. If the two indicators are completely independent, the correlation will approach zero. If they always vary in exactly the same way, the correlation will be one. (If they vary in the opposite way, the correlation will approach -1). If the correlation is significant at $p < .0001$, this means that there is a very low probability (less than one in 10,000) that the observed correlation arose simply by chance. A positive correlation does not necessarily mean that there is a ‘causal’ relationship: there might be some other factor (such as resourcing) that influences both variables.

Interestingly there is no clear correlation between positive outcomes for the community and positive impacts on protected area values (i.e. the ‘win-win’ situation), indicating that a different set of factors seems to be more important for conserving values.

If we try to interpret these results bearing in mind the discussions in previous chapters on the type of linkages between local people and protected areas, these figures would indicate that where protected areas are providing benefits to local people this is through management processes creating direct linkages with local people, i.e. where the socio-economic development of communities living around protected areas is being taken into account through participation in protected area establishment and management. Protected areas are thus more likely to have positive community benefits where there are specific programmes of public outreach (including effective law enforcement and visitor management as well as community participation, communication and benefit programmes).



Discussing management effectiveness with communities living around Bwindi Impenetrable Forest National Park, Uganda

© Marc Hockings

Putting the data in context

One trend that seems to emerge from the analysis of the global study data is the positive assessment of management outcomes, i.e. the achievement of agreed objectives. The two outcome indicators, on the effect of protected area management on local communities, discussed above, and on the current condition of the values the protected area aims to protect, have average scores of 6.4 and 6.5 out of 10 respectively.

On the other hand, of the 30 ‘headline indicators’ from the common reporting format analysed so far, the areas of protected area management with the lowest results, and thus the least effective areas of management, include the indicators on community participation (4.6 out of 10), programmes for community benefit or assistance (3.2 out of 10), communication programmes (4.3 out of 10), management planning (4.7 out of 10) and visitor management (4.1 out of 10). As these indicators are strongly correlated with perceived community benefits it is clear that more work needs to be done in these areas.

Effectiveness of community outreach

An analysis by WWF of the management effectiveness of over 200 forest protected areas in 37 countries using the Tracking Tool in 2003-4 found that despite a wide recognition of the importance of social issues, protected areas taking part in the survey generally concluded that the input and participation of local communities and indigenous peoples in management decisions are not being addressed very effectively. Problems are evident both in terms of relations with local communities and indigenous peoples and also with tourists, in particular the provision of visitor facilities. This was despite the fact that many respondents identified work with communities as a critical management activity. The analysis also found a weak relationship between effectiveness of community relations and overall effectiveness of the protected area³⁹⁴.

Finally, it should be noted that these data need to be interpreted in the light of the nature of the systems used to make these assessments of management. Most management effectiveness evaluation systems used around the world assess management qualitatively using the expert opinion of managers, stakeholders and others involved in the management of sites. In some cases and for some indicators the assessment will be based on quantitative data from monitoring or research programmes, management information systems or other sources, while in others it will be based solely on the expert judgement of the assessors.

Conclusion

So what does this information tell us? Firstly, there appears to be a strong link between management activities, or processes, which involve community engagement with the perception of benefits to the local community. However, somewhat paradoxically, the outcome indicator on the overall effect of the protected area on the local community has one of the highest scores in the dataset; whilst the individual indicators relating to community process score poorly. Finally, from this dataset at least there seems to be little correlation between positive community benefits and the conservation of values.

As we have stressed throughout, for data on these issues to be fully analysed and lessons to be learned from the experiences of protected areas around the world there is an urgent need for effective evidence-based research, monitoring and assessment. Studies linking poverty reduction and conservation have emphasised the need for an adaptive management framework that can enable lessons to be learned from both successes and failures³⁹⁵. But without good quantitative and qualitative indicators and baseline data the monitoring of outcomes is impossible and the information required to adapt management approaches and processes is missing³⁹⁶.

The need to value socio-economic benefits and services

An assessment of 197 protected areas in Russia using the RAPPAM Methodology found that major weaknesses of the protected area system were that socio-economic benefits and services were systematically under valued, under recognised and poorly managed³⁹⁷.

For example, a review of 37 studies that claimed to have achieved both poverty reduction and biodiversity conservation through specific programmatic interventions, such as ecotourism, prompted the authors to warn that conclusions which are: *“based on evidence that is collected from a single time period and without careful and systematic consideration of the causal mechanisms at play are ill suited to generate policy-relevant insights into the tradeoffs between poverty alleviation and biodiversity conservation”*³⁹⁸.

Considerable work has gone into the assessments reported here which have been ‘translated’ into the common reporting format; and it is hoped that in the future information on the effectiveness of management will be linked to the World Database on Protected Areas. The data thus provide a useful baseline against which to gauge subsequent assessment of management and to establish trends and identify best practice on a whole range of management activities.

But if we are to truly understand the link between the management of protected areas and poverty reduction, there is clearly a need for much more information. In particular there is a need for:

- ✓ Individual site studies linked to clear management recommendations in relation to protected areas, local people and poverty reduction
- ✓ More detailed assessment of the range and type of benefits protected areas can provide and the dynamics of the relationship between various measures of poverty and biodiversity³⁹⁹
- ✓ More investigation and acknowledgement of the role that poor people can play in conserving protected areas – not only in management but also by sharing, using and conserving indigenous knowledge

In the next chapter of this report we make a start in examining these needs. We selected a small regional subsection of all those protected areas within the WWF portfolio that answered the question in the METT regarding benefits to local people with the highest scoring multiple-choice answer, i.e. *there is a significant or major flow of economic benefits to local communities from activities in and around the protected area (e.g. employment of locals, locally operated commercial tours etc)*. We asked them to field-test the first draft of the Protected Areas Benefits Assessment Tool (PA-BAT), subsequently revised and published by WWF in February 2008. The resulting seven case studies summarise the PA-BAT results for each protected area and discuss the main benefits the protected areas provide to their local communities.

Chapter 7: Case studies

Introduction

In the last chapter we looked at a vast set of protected areas and noted that a number of them appeared to provide benefits to local people. However, details on what sort of benefits, exactly whom benefited etc, are not easy to extract from global data sets. Therefore, in order to investigate further we chose seven case studies to explore in more detail. The case studies chosen are a deliberately biased collection. Our criteria were simple, the case studies had to be protected areas:

- ✓ Where WWF was currently working
- ✓ Where staff took part in the assessment of management effectiveness overseen by WWF between 2003 and 2007 using the Management Effectiveness Tracking Tool *and* answered the question in the Tracking Tool regarding benefits to local people with the highest scoring (i.e. most positive) multiple-choice answer (see table 13)⁴⁰⁰
- ✓ Which together represent a reasonable regional range and a variety of management approaches
- ✓ Which agreed to field test the Protected Areas Benefits Assessment Tool or PA-BAT (see below)⁴⁰¹

Our aim was to see if we could draw any lessons from this subset of protected areas to see why they were of particular benefit to local communities. The resulting seven case studies (see table 13) introduce the individual protected area and provide some background to the site, locality and people. They draw on WWF project materials to describe activities at the site, summarise the PA-BAT results for each area and then specifically discuss the main benefits that the protected areas provides to their local communities.

Table 13: **Summary of Management Effectiveness Tracking Tool (METT) results for the seven case studies discussed below and details of METT question**

Protected area (date METT assessment completed)	Management Effectiveness Tracking Tool	
	Question 29: Economic benefit	Question 27: Condition assessment
La Aurora del Palmar, Argentina (May 2003)	3	2
Oulanka National Park, Finland (July 2003)	3	3
Kinabatangan Wildlife Sanctuary, Malaysia (October 2005)	3	1
Khar-Us Nuur National Park, Mongolia (February 2005)	3	2
Chitwan National Park, Nepal (May 2003)	3	2
Białowieża National Park, Poland (December 2005)	3	2
Udzungwa Mountains National Park, Tanzania (June 2003)	3	3
METT Question	Description	Score
27. Condition assessment: Is the protected area being managed consistent to its objectives?	Important biodiversity, ecological and cultural values are being severely degraded	0
	Some biodiversity, ecological and cultural values are being severely degraded	1
	Some biodiversity, ecological and cultural values are being partially degraded but the most important values have not been significantly impacted	2
	Biodiversity, ecological and cultural values are predominantly intact	3
29. Economic benefit assessment: Is the protected area providing economic benefits to local communities?	The existence of the protected area has reduced the options for economic development of the local communities	0
	The existence of the protected area has neither damaged nor benefited the local economy	1
	There is some flow of economic benefits to local communities from the existence of the protected area but this is of minor significance to the regional economy	2
	There is a significant or major flow of economic benefits to local communities from activities in and around the protected area (e.g. employment of locals, locally operated commercial tours etc)	3

Several other areas were approached to develop case studies but unfortunately either the time or resources were not available to complete the PA-BAT and work with us to develop a case study. Thus although there is a reasonably good regional spread there is less variety of biomes, with the majority of case study sites being forested sites, and unfortunately no marine sites are included here.

The Protected Areas Benefits Assessment Tool

In order to develop these case studies we have used the PA-BAT to delve further into the type of benefits stated.

The PA-BAT has been developed as part of the wider WWF Arguments for Protection project because to date there has been very little work done on evaluating the whole range of benefits that protected areas can provide. Most studies have instead usually focused on one or two specific resources (such as tourism or the role in provision of clean water). Although clearly these studies are very important, there remains a need to help protected area managers consider all the benefits that could arise from the area they manage, both to aid understanding about the importance of an area and to help ensure management protects this wide variety of values.

The PA-BAT can help protected area managers and others to extract more detail about a range of real or potential benefits that protected areas can provide different stakeholders, from local communities to the global community, including industry, government etc. These benefits extend beyond economic benefits, to include environmental services, subsistence, cultural/spiritual and political values. The PA-BAT is thus, at its simplest, an *aide memoire* to help those working in protected areas to think logically about the types of benefits that come, or could come, from the protected area; to consider who benefits and by how much; and to assess how much of the protected area is important for a particular benefit and how much of the time the area supplies these goods or services. If used to its full capacity the PA-BAT can also record economic valuation, sustainability issues, biodiversity impacts and management responses to particular issues that have been identified in the assessment.

La Aurora del Palmar, Argentina



Summary of benefits

- ✓ Livestock grazing and fodder
- ✓ Non-commercial water use
- ✓ Recreation and tourism
- ✓ Increasing knowledge
- ✓ Education
- ✓ Climate change mitigation
- ✓ Soil stabilisation
- ✓ Water quality and quantity
- ✓ Timber

Introduction

✓ The region

The La Aurora del Palmar private reserve is situated in the Colón department in the province of Entre Ríos, north east of Buenos Aires city on the border with Uruguay. It is opposite the El Palmar National Park. Cattle-rearing is the dominant activity in this part of the country but agriculture, reforestation and ecotourism activities are also taking place.

The name of the province means "among rivers" and many rivers and streams cut through the predominately flat landscape. The area is part of the Pastizales Húmedos which extend from the extreme southern part of the Rio Grande do Sul, a Brazilian state, to include the entire country of Uruguay, and a small section of the Argentinean province of Entre Ríos.

✓ The people

The majority of the Argentinean population are of European descent, with the pure indigenous population, the Mapuches, Collas, Tobas, Wichis, Guaraníes Maticos and Chiriguano, representing only 0.5 per cent of inhabitants⁴⁰². There are no traditional or indigenous people in La Aurora del Palmar. However, recently in the Entre Ríos region a community of 250 'Charrúa Pueblo Jaguar' people were granted recognition as an indigenous community. They come from the 'indios tehuelches', whose culture dates back 13,000 years.

✓ The protected area

The El Palmar National Park was established in 1966 specifically to protect the yatay palm while another population is being protected in the Mburucuyá National Park (Corrientes). The yatay palm tree (*Butia yatay*) is symbolic of Argentina. It is an indigenous species with yellow flowers and orange fruits. Originally, the yatay palm had a large distribution stretching across Santa Fe, Corrientes and Entre Ríos provinces and in Uruguay. However, because the growing conditions they require are also good for forestry and agriculture many of these palm groves were removed. Today only small pockets of yatay remain scattered across the northeast of the country. Despite the establishment of the national parks, a large portion of the palms remained outside the parks, some of which were eventually also destroyed. Further conservation efforts were clearly urgently required.

Protected since 1998, La Aurora del Palmar farm is part of Fundación Vida Silvestre Argentina's (FVSA) network of 13 "wildlife reserves" (and the only one in the province of Entre Ríos). These reserves are privately owned land of considerable ecological value whose owner agrees to preserve nature through the sustainable use of its natural resources. Since most of the land in Argentina is in private hands, landowners play a central role in the future of its natural resources. The FVSA private reserves programme offers landowners a means to equate production with nature conservation. Currently the programme includes some 105,000 ha on 13 properties spread throughout the country. La Aurora del Palmar was declared a provincial Multiple Use Reserve by legal

decree in November 2001. These reserves have as primary objective to conserve the balance between conservation and sustainable use, in a way that is compatible with their particular ecological characteristics and productive potential. They are governed by specific rules and prohibitions, including for instance zoning for different extractive activities, as well as a ban on abusive use of natural resources^{xiv}.

La Aurora del Palmar covers over 1,098 ha, of which about 200 ha are well-preserved forest of mature palm trees: the largest remaining area of yatay palms outside the National Park in Entre Ríos. As well as the palm forests, “gallery forest” follows the “Arroyo El Palmar” (El Palmar Creek) with xerophilous woods, large areas of wild grasslands and natural ponds. The Palmar watershed as a whole is important for birds, fish and amphibians, particularly for their reproduction. La Aurora del Palmar is also home to several endemic bird species and a variety of important species include the rodents tuco tucos, the South American grey fox (*Pseudalopex griseus*), the endangered greater rhea (*Rhea americana*), some edentate species and ferrets.

The main conservation aim of La Aurora del Palmar is to contribute to the protection of this unique and fragile landscape while also playing an important educational and awareness raising role within the local population and tourists. The specific conservation activities that the reserve engages in, together with FVSA, include:

- Studies on regeneration and conservation of the yatay palm
- Engaging with local landowners (in collaboration with the El Palmar park) to find solutions to protect the Palmar watershed
- Reintroduction of indigenous species
- Environmental education workshops, targeting local communities and training local guides
- Planning ecotourism and grazing activities.

Production activities take place alongside conservation. These include: cultivation of citrus fruits, livestock, eucalyptus and pine plantations and walnuts.

Protected Area Profile

Name:	Refugio de Vida Silvestre “La Aurora del Palmar”
Location:	3.5 km south of “Ubajay”, Department of Colón, Province of Entre Ríos in Argentina
Objective:	1) To promote wildlife conservation, focused on <i>Butia yatay</i> palm communities, 2) To carry out livestock production and tourism activities.
Gazetted:	1998
Area:	1,098 ha
Management:	Owners but in arrangement with Fundación Vida Silvestre Argentina
Land owner:	Private
IUCN Category:	Not assigned

Values and Benefits

✓ Tourism and recreation

Private reserves, such as La Aurora del Palmar, are increasingly turning to tourism as a major revenue earning activity. This provides an opportunity for landowners to diversify their income base. The reserve is considered an important recreational area for the national population and there is considerable potential for increasing tourism activities.

A variety of services exist including lodging options ranging from specially refurbished antique train wagons, cabins and a camping ground run by local employees. The proximity of the national park is an important draw for tourists and the private reserve offers a range of activities including guided tours and treks at the reserve and national park, horseback riding within El Palmar, canoeing in El Palmar Creek and bird watching. Within La

^{xiv} Ley N° 7138, *Sistema Provincial De Areas Protegidas*

Aurora about half the site is used for tourism and recreation activities. The main activities are organised and supported by local guides specially trained by FVSA. Currently the major beneficiaries of the tourism activities at the reserve are the tourist industry, but the reserve is also potentially important to local people particularly as tourism increases and more people are involved in the industry.

✓ **Knowledge and education**

About half of the site is of major importance for research and education. This is not a major source of revenue for the owners, but the area is an important learning centre. Research focuses essentially around the population dynamics of the yatay palm. Facilities are available at the site for up to 3000 students per year. At a local level capacity building activities, focused on tourism, have taken place in the reserve. Local people are being trained to receive tourists, for example through learning English, developing traditional cooking skills, public relations, guiding techniques, entertainment and handicrafts.

✓ **Grazing and fodder**

Livestock grazing and fodder occurs in a rotation pattern in about 90 per cent of the reserve. Currently the owner together with FVSA is planning to improve this grazing. It is important to local people living in the reserve, and local people near the reserve, to the national population, government, industry and the global community. Grazing is a major source of revenue for the owner(s) and is estimated at US\$50,000 per year.

✓ **Environmental services: Water, soil stabilisation and carbon sequestration**

The reserve provides important benefits all year round in terms of water quality and quantity. Up to 50 per cent of the site provides such services. Sewage treatment is needed however, to ensure the quality of the water. In addition, the site provides water to local people. The site also plays a minor role in both soil stabilisation and carbon sequestration.

✓ **Timber**

Timber plantations on the reserve are a major source of revenue for the owners of the reserve.

Conclusions

This reserve provides a particularly useful role in terms of raising awareness about the importance and value of local biodiversity as it is used as a training centre. It is also potentially of significant financial importance from ecotourism revenues. Given Argentina's economic crisis of the year 2001, the potential to combine production and conservation activities in a private reserve such as this one may provide a way forward to strengthen conservation activities in a way that is meaningful for local populations.

Sources and contacts

- PA-BAT, completed by Alejandra Carminati and Ricardo Banchs, FVSA as well as the landowner in May 2007
- <http://www.vidasilvestre.org.ar/programaDescripcion.php?idSeccion=94>
- http://www.parquesnacionales.gov.ar/i/03_ap/11_palmar_PN/11_palmar_PN.htm
- Sombrilla Refugee Support Society –Newsletter summer 2005 (<http://www.sombrilla.ca/newsletters/Summer05.pdf>)
- <http://www.entrierios.gov.ar/noticias/v2/notas/ver.php?12028>
- <http://cop10.medioambiente.gov.ar/en/information/default.asp>
- <http://www.nadir.org/nadir/initiativ/agp/free/imf/indigenas/guarani.htm>
- <http://www.auroradelpalmar.com.ar/comoes.htm>
- http://www.worldwildlife.org/wildworld/profiles/terrestrial/nt/nt0710_full.html

All websites, accessed on 24 July 07.

Table 15: Summary of PA-BAT for La Aurora del Palmar, Argentina

Use of the resource	Amount of PA involved	Amount of the year that activity takes place	Indigenous / traditional people living in the PA	Other local people living in the PA	Indigenous / traditional / local people near the PA	National population	Government	Industry	Global community
Grazing and fodder is potentially important but currently not undertaken	50-100%	Continuous use		✓	✓	✓	✓	✓	✓
Non-commercial water use is potentially important	5-10%	Continuous use			✓	✓			
Non-commercial water use is of major importance for subsistence	5-10%	Continuous use		✓					
Recreation and tourism is a potential benefit which is currently not realised	10-50%	Continuous use		✓			✓		
Recreation and tourism is of minor value to human well-being (i.e. for health and relaxation)	10-50%	Continuous use							✓
Recreation and tourism is of major value to human well-being	10-50%	Continuous use				✓			
Recreation and tourism is of minor importance as a source of revenue	10-50%	Continuous use			✓				
Recreation and tourism is of major importance as a source of revenue	10-50%	Continuous use						✓	
There is potential to use the protected area to increase knowledge but this is currently not realised	10-50%	Regular but not continuous		✓	✓			✓	
The protected area is of minor importance in increasing knowledge	10-50%	Regular but not continuous							✓
The protected area is of major importance in increasing knowledge	10-50%	Regular but not continuous				✓	✓		
The protected area is of major importance for education	10-50%	Regular but not continuous		✓	✓	✓			

Use of the resource	Amount of PA involved	Amount of the year that activity takes place	Indigenous / traditional people living in the PA	Other local people living in the PA	Indigenous / traditional / local people near the PA	National population	Government	Industry	Global community
The protected area provides minor benefits through carbon sequestration	50-100%	Not applicable		✓	✓	✓			✓
The protected area has a minor non-economic role in soil stabilisation	50-100%	Not applicable		✓	✓	✓			
The protected area provides minor water quality and quantity benefits	10-50%	Continuous use				✓			
The protected area provides major water quality and quantity benefits	10-50%	Continuous use		✓	✓				
The role of the PA in water quality and quantity has minor economic benefits	10-50%	Continuous use			✓				
Management of timber Potentially important but currently not used	10-50%	Occasional uses		✓	✓	✓	✓		✓
Timber removal is of major importance as a source of revenue	10-50%	Occasional uses						✓	

Oulanka National Park, Finland

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Summary of benefits

- ✓ Recreation and tourism
- ✓ Hunting
- ✓ Wild food plants
- ✓ Fishing
- ✓ Livestock grazing and fodder collection
- ✓ Cultural and historical values
- ✓ Knowledge and education
- ✓ Carbon sequestration
- ✓ Soil stabilisation
- ✓ Water quality and quantity

Introduction

✓ The region

Finnish Lapland is located at the top of northern Europe. Its nearest neighbours are Sweden to the west, Norway to the north and Russia to the east. Although located on and above the Arctic Circle, the climate of the region, thanks to the warming influence of the Gulf Stream, is milder than at equivalent latitudes in Siberia and Canada.

Lapland is one of the northernmost parts of the world with forest cover. The boreal coniferous forest zone is dominated by Scots pine (*Pinus sylvestris*). The total area of Lapland is about 9.3 million ha, about one third of the total area of Finland, of which about 9.1 million ha is forested⁴⁰³.

✓ The people

The vast emptiness of Lapland is home to only about 3.6 per cent of the Finnish population; about 185,000 people, some 5 per cent of whom are indigenous. The biggest towns in Finnish Lapland are Rovaniemi (the provincial capital), Kemi and Tornio. Traditionally agriculture, forestry and reindeer husbandry have been the primary occupations; however today tourism is the most notable human activity in the region.

✓ The protected area

Oulanka National Park lies at the south-eastern border of Lapland, in the Municipalities of Kuusamo (Ostrobothnia) and Salla (Lapland), along the Russian border and close to the Arctic Circle. The area is characterised by diverse river systems with two main rivers – Oulankajoki at the heart of the park and Kitkajoki to the south – and a number of smaller tributaries. In addition to the typical pine dominated coniferous forests, the distinctive herb-rich forests and the large mosaic of mires in the northern part of the park make the area exceptionally diverse. The difference in temperature between the high rising fells and low river valleys, the canyon-like gorges and cavities offering a variety of exposures with ever changing microclimatic conditions and the limestone bedrock (Dolomite), make the area an ideal environment for a versatile range of species, many of which are rare.

The park was founded in 1956 and expanded twice (in 1982 and 1989), but discussions on protecting the area can be traced back to 1897. The park is contiguous with Paanajärvi National Park in Russia which was established in 1992. Collaboration between the national parks of Oulanka and Paanajärvi is based on a treaty between the Finnish and the Russian governments signed in January 1992, and on a protocol between the Republic of Karelia and the Administrative Board of the Province of Oulu in Finland, signed May 1992⁴⁰⁴. The parks share a common vision and ongoing operational co-operation

is based on the agreement between the governing bodies of the parks, Paanajärvi National Park and Metsähallitus (the state owned park service in Finland), signed in 1996 and revised 2005.

As with all the case studies presented here, Oulanka National Park was included in a survey of 206 forest protected areas carried out by WWF and the World Bank, using the METT. In the analysis of overall results, Oulanka had the highest score of all the protected area assessed using the METT.

Protected Area Profile	
Name:	Oulanka National Park
Location:	Ostrobothnia
Objective:	Nature Conservation Recreation and nature oriented tourism
Gazetted:	1956 (extended 1982 and 1989)
Area:	29,270 ha
Management:	Metsähallitus Natural Heritage Services
Land owner:	The state
IUCN Category:	II

Values and Benefits

✓ Recreation and tourism

Tourism has been the focus of development for the Lapland area since the 1980s. The majority of Finns live in urban areas, but 40 per cent of the adult population take on average nine nature trips per year. Additionally about 5 million foreign visitors arrive in Finland every year. Nature is the main reason mentioned by foreign visitors for choosing Finland as a destination and about one quarter of visitors take part in outdoor activities⁴⁰⁵. Oulanka is one of the most visited national parks in the country, receiving 162,000 visitors in 2002, some 2.7 times as many as ten years earlier⁴⁰⁶.



A wooden board walk crossing wet peatlands in Oulanka National Park

Nigel Dudley

Businesses linked to nature tourism play an important role in the local economy; with tourism providing direct employment for 3-4,000 people in Lapland and, in 2000, being worth some US\$324 million to businesses in Lapland⁴⁰⁷. It is estimated that the region's annual income from the park is approximately US\$19 million.

The park's management plan designates zones for intense recreation/tourism. Regular monitoring of trail erosion, littering etc., and the maintenance of all visitor infrastructure is carried out by Metsähallitus. The park is also certified by PAN Parks, a scheme which aims to promote wilderness management in protected areas in Europe and facilitate sustainable tourism development in and around protected areas.

✓ Grazing

Reindeer herding is limited to the northern part of Finland and, unlike Norway and Sweden, the right to reindeer herding is not restricted to the Saami people. The reindeer herding area in Lapland is divided into 56 reindeer herding cooperatives, the *paliskunta*, each with its own administration. The southern half of Oulanka is part of the Alakitka reindeer herding association which currently has approximately

1,500 reindeer in the winter and 2,300 in the summer⁴⁰⁸. Grazing of these semi-domesticated reindeer is allowed in the park. Grazing takes place mainly during the summer since most of the reindeer are kept in corrals outside the park during winter. There has been some concern about the ecological sustainability of the grazing in the park and management options include the adjustment of reindeer quotas by the Ministry of Agriculture and Forestry and the association of reindeer herders.

✓ **Hunting**

Although hunting is not allowed in the original national park (established in 1956), and in a smaller no-hunting zone (due to safety reasons), hunting remains of minor importance for subsistence in the park, with hunting rights varying, depending on species. Hunting takes place mostly at weekends between September and November.

✓ **Wild foods and fishing**

Everyone is allowed to pick mushrooms and wild berries in Finland. Therefore, the whole park is utilised for this purpose between the months of July and September. Fishing is also permitted but regulated in some areas of the Oulankajoki River (between 5 and 10 per cent of the area) during the fishing season of June and September. Trout populations are monitored by Metsähallitus and fishing regulations are subject to annual negotiations. In accordance with the PAN Parks criteria the park authority has also created a fishing free zone where sport and subsistence fishing has been abandoned.

Sources and contacts

- The PA-BAT was completed by four park staff co-ordinated by Matti Tapaninen, senior planning officer of Metsähallitus
- Additional material and comments from Zoltan Kun and Vlado Vancura from PAN Parks
- <http://www.panparks.org/Network/OurParks/Oulanka> (accessed 20/7/07)
- Metsähallitus Natural Heritage Services 2004 report *Management Effectiveness Evaluation of Finland's Protected Areas* by Brian Gilligan, Nigel Dudley, Antonio Fernandez de Tejada and Heikki Toivonen.
- Report on the use of the METT *Are Protected Areas Working?*, published by WWF in June 2004, for the WWF Annual Conference

Table 16: Summary of PA-BAT for Oulanka National Park, Finland

Use of the resource	Amount of PA involved	Amount of the year that activity takes place	Indigenous / traditional people living in the PA	Other local people living in the PA	Indigenous / traditional / local people near the PA	National population	Government	Industry	Global community
Hunting is of minor importance to subsistence	50-100%	Regular not continuous			✓				
Wild food plant collection is of minor importance to subsistence	50-100%	Regular not continuous			✓				
Fishing in or near the protected area is of minor importance to subsistence	5-10%	Regular not continuous			✓				
Fishing in or near the protected area is of minor importance as a source of revenue	5-10%	Regular not continuous			✓				
Grazing and fodder collection is of major importance as a source of revenue	50-100%	Regular not continuous			✓				
Cultural and historical values are of minor non-economic importance	10-50%	Continuous use			✓	✓			
Cultural and historical values are of major non-economic importance	10-50%	Continuous use					✓		
Recreation and tourism is of minor value to human well-being (i.e. for health and relaxation)	10-50%	Continuous use							✓
Recreation and tourism is of major value to human well-being	10-50%	Continuous use			✓	✓	✓		
Recreation and tourism is of major importance as a source of revenue	10-50%	Continuous use			✓				
The protected area is of minor importance in increasing knowledge	50-100%	Continuous use			✓				✓
The protected area is of major importance in increasing knowledge	50-100%	Continuous use				✓	✓	✓	
The protected area is of minor importance for education	50-100%	Continuous use			✓			✓	✓
The protected area is of major importance for education	50-100%	Continuous use				✓	✓		
The protected area provides minor benefits through carbon sequestration	50-100%	Not applicable			✓	✓	✓		✓
The protected area has a minor non-economic role in soil stabilisation	10-50%	Not applicable			✓		✓		✓

Use of the resource	Amount of PA involved	Amount of the year that activity takes place	Indigenous / traditional people living in the PA	Other local people living in the PA	Indigenous / traditional / local people near the PA	National population	Government	Industry	Global community
The protected area is potentially important for flood prevention	10-50%	Not applicable				✓	✓		
The protected area provides minor non-economic flood prevention benefits	10-50%	Not applicable			✓				
The protected area provides minor water quality and quantity benefits	10-50%	Continuous use					✓		✓
The protected area provides major water quality and quantity benefits	10-50%	Continuous use			✓		✓		
The role of the PA in water quality and quantity has major economic benefits	10-50%	Continuous use						✓	

Kinabatangan Wildlife Sanctuary, Malaysia



Summary of benefits

- ✓ Fishing
- ✓ Water use (commercial and subsistence)
- ✓ Cultural and historical values
- ✓ Recreation and tourism
- ✓ Increasing knowledge
- ✓ Education
- ✓ Carbon sequestration
- ✓ Soil stabilisation
- ✓ Coastal protection
- ✓ Flood prevention
- ✓ Water quality and quantity

Introduction

✓ The region

The Kinabatangan is Sabah's longest river. It originates in the south west of the region and flows for 560km to the Sulu Sea. As the river reaches the lowlands, it meanders through lower Kinabatangan, forming the largest remaining forested river floodplain in Malaysia. The area is characterised by oxbow lakes, open swamps and distinctive vegetation, including freshwater swamp forests, riverine forests and remnants of lowland dipterocarp forests. The lower Kinabatangan floodplain hosts more than 1,000 plant species, 250 bird species, 90 fish species and 50 mammal species, including the Borneo Pygmy Elephant (*Elephas maximus borneensis*). It is one of the only two areas in the world where 10 primate species, including the endemic Bornean orangutans (*Pongo pygmaeus*) and proboscis monkeys (*Nasalis larvatus*) can be found. It is also the site for the richest freshwater fisheries in Sabah.

Despite this rich biodiversity, the Kinabatangan floodplain is under threat. The alluvial swamps, when drained, provide ideal land for cultivation of oil palm. Malaysia and Indonesia are the world's leading producer countries of palm oil. Thirty years ago the total area planted with oil palm in Malaysia was 200,000 ha; today 2.8 million ha have been planted and further land suitable for oil palm is getting scarce leading to plantations increasingly being developed in areas designated as important for conservation; including large areas of land in the lower Kinabatangan region. The growth of the oil palm sub-sector has resulted in important economic benefits – in 1998 export revenues from palm oil raised US\$5.4 billion for Malaysia's economy. But these benefits have not come without costs. The industry poses an increasing threat to Malaysia's remaining natural forest cover, can have major polluting impacts and has led to social conflicts as local communities have been displaced by the large scale plantations, and migrant communities have flooded into the area to work on the plantations.

✓ The people

A study of areas with the largest indigenous population in the region found that village residents engage in a mix of traditional occupations including:

- subsistence farming (e.g. tending home gardens or hill rice cultivation)
- hunting and fishing (fisheries in particular are important for food and a source of cash income)
- agriculture (e.g. small holdings of irrigated rice or subsidised cash crops)
- short term jobs (e.g. forest clearing, building village infrastructure, contracted rattan collections, boat hires to tourists or plantation workers)
- small-scale trading and businesses (e.g. providing transport services, grocery shops or petrol kiosks, trading fresh produce)

Additional support comes from family members (immediate or extended) who possess regular government jobs or otherwise, as well as government aid or other subsidies (e.g. housing subsidies, agriculture subsidies, flood relief aid) and ‘wind-fall’ profits from natural resources and leasing or sale of land (e.g. to tourist operators, for rights to timber on alienated land or to oil palm estates).

In the past, traditional methods and levels of harvesting in the lower Kinabatangan probably had a low environmental impact on the forest and freshwater ecosystem, largely due to low population size, abundant forest resources and land available for cultivation. Small rural communities were thus able to sustain their lifestyles adequately. However, since the 1950s, logging activities and later oil palm estate development have greatly affected the natural resource base in the lower Kinabatangan. Forests in the region have been degraded over time due to fire, logging activities and forest conversion. Logging and subsequently oil palm plantations have also had a profound influence on the ecosystem (i.e. during the growth period through fertiliser and pesticide runoffs and the processing of oil palm due to organic and solid effluents entering the rivers).

The survey carried out by WWF (see resources section below for details) found that there were many natural products or resources that were particularly important for the welfare of the local community notably: rattan, timber, wild meats, especially deer (*Cervus unicolor*), fish and prawns; and noted that the forest also provides environmental and social services that directly or indirectly affect the local communities, e.g., water quality or flood protection. The researcher concluded that the: *“impact though of the local community on the natural resources are minimal compared to the large-scale conversion of land...”*. However it was clear that the well-being of these communities were under threat due to the various impacts of the oil palm plantations noted above and in particular due to the increased competition for resources as the population grows.



Figure 4: Land use along an approximately 60km stretch of the Kinabatangan River, the areas in white are oil palm plantations, dark grey areas are forest reserves and light grey areas indicate the Kinabatangan Wildlife Sanctuary

✓ **The protected area**

The steady destruction of the floodplain and the increasingly endangered swamp forest habitats, their wildlife and fisheries and the livelihoods of the indigenous people prompted a proposal to establish a wildlife sanctuary in the region. Success was achieved with the gazettelement of the sanctuary in 2005 (see box and figure 4).

Protected Area Profile

<i>Name:</i>	Kinabatangan Wildlife Sanctuary
<i>Location:</i>	Sabah State, Malaysia
<i>Objective:</i>	Protecting nature and maintaining wildlife habitat and its natural ecosystem in an undisturbed state, ensuring maintenance of biodiversity values and protecting significant species of animals and plants and their biotic communities
<i>Gazetted:</i>	In 2005 under Wildlife Conservation Enactment 1997
<i>Area:</i>	26,103 ha; the area currently consists of 12 fragmented lots which are located along the lower Kinabatangan river (see figure 4)
<i>Management:</i>	Sabah Wildlife Department
<i>Land owner:</i>	State Government of Sabah
<i>IUCN Category:</i>	IV

Values and Benefits

An assessment of the benefits of the Kinabatangan Wildlife Sanctuary was carried out using the draft Protected Areas Benefits Assessment Tool (PA-BAT) in June 2007. The matrix below (table 17) details all the benefits considered of importance by the assessors. The following discussion concentrates on those primarily linked to the well-being of the local people which, not surprisingly, focus on the Kinabatangan River.

✓ **Water quality for drinking and sustaining fish supplies**

As the PA-BAT summary shows, the Wildlife Sanctuary is of major importance in terms of water quality for a range of stakeholders, from local to national. From the local perspective, water quality is linked to both subsistence use of water (the river is the major source of water) and to local fisheries.

Most of the fish caught by local people is wild. During the survey work carried out by WWF, local people stated that in some areas the pressure on fishing in the river has been so intense that there had been a perceptible decline in fish stocks. Although the Kinabatangan River and most of its tributaries are not part of the Sanctuary, the spawning sites are, and thus hopefully the protected area will help restock fisheries in the future.

The main wild species that could provide good income when sold at market are freshwater prawns and *kalui* or giant gouramy (*Osphronemus goramy*). Local people think, however that the latter may now be extinct from the wild in the region probably due to over-harvesting. Prawns are very sensitive to water quality, and sedimentation and chemical runoff (both of pesticides and fertilisers) into the streams and rivers can adversely affect prawn populations. Again locals report that in the Sukau River, activities upstream from a palm-oil processing mill (which releases its effluent into the river) have affected prawn yields.

Better management of water resources is thus required. Heavy siltation of the main river is causing major problems for the municipal water supply. Local communities' sewage goes directly into the river. There is a concern that agricultural runoff from large scale plantations which goes in the river could end up in the important Sulu Sulawesi Marine Ecoregion. There are between 20 and 35 palm oil mills that operate in the river basin.

✓ **Environmental services: flood control and soil stabilisation**

Rivers can of course provide many more environmental services than just water quality. All rivers are liable to flooding but some areas along the Kinabatangan River, especially those cleared for agriculture and settlement have suffered severe flooding. Flooding exacerbated by land use changes and in areas cleared of vegetation can lead to erosion and increased sediment loads. Unfortunately, the patches of

forests along the main river are not able to mitigate the flooding significantly due to their fragmented locations and insufficient size. WWF has been working with local groups, not only to protect those remaining natural areas along the river, but also to restore forest areas. Since June 2003, for example, 32,980 native tree species have been planted; which should help mitigate the impacts of flooding and reduce soil erosion.



Participant of the Home Cultivation Scheme with her collection of native seedlings; these seedlings are for the reforestation work in Kinabatangan carried out by private land owners through WWF projects

© WWF-Malaysia

✓ **Tourism**

The Kinabatangan region has great tourism potential due to its attractive scenery and abundant wildlife, and is already attracting large numbers of local and foreign tourists. Interesting sites lie both within and outside the Kinabatangan Wildlife Sanctuary. However for this potential to be fully recognised, development work was needed. In the mid-1990s tourist numbers and activities were hardly regulated; local villagers lacked the skills to grasp economic opportunities in tourism, and damage from unplanned tourism was an increasing concern.

Today, the tourism industry in the area is booming. Tourists do not stay within the protected area but tourism activities depend on wildlife sightings in the protected area along the river. There are currently however, no sustainable tourism guidelines in place for activities in Kinabatangan.

Some villagers are benefiting from this economic activity; with tourism activities revolving around one village and minor activities in three others. WWF Malaysia has been working in collaboration with the state government to help the local community to develop sustainable community-based tourism in the Lower Kinabatangan since April 1997. WWF has helped prepare several eco-tourism related development and business plans. One particularly interesting initiative in the Kinabatangan region has been the Miso Walai Homestay programme established with the Ministry of Tourism Development, Environment, Science and Technology. Miso Walai means 'together as one house' in the language of the local Orang Sungai people. Miso Walai combines plans for transport services, a boat service, handicraft cottage industries and recreational activities to provide a comprehensive tourism venture. Visitors to the homestay programme experience the rural lifestyles by joining in the daily activities of their host family, be it planting padi in the fields, fishing or gathering edible plants from the forest; they can also go on jungle treks, boat rides or even get involved in community and conservation activities.

Sources and contacts

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- WWF Project MY0072 - Tourism Management Plan, Kinabatangan Region, Sabah, East Malaysia
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Table 17: Summary of PA-BAT for Kinabatangan Wildlife Sanctuary, Malaysia

Use of the resource	Amount of PA involved	Amount of the year that activity takes place	Indigenous / traditional people living in the PA	Other local people living in the PA	Indigenous / traditional / local people near the PA	National population	Government	Industry	Global community
Fishing in or near the protected area is of minor importance to subsistence	50-100%	Continuous use			✓				
Fishing in or near the protected area is of minor importance as a source of revenue	50-100%	Continuous use				✓		✓	
Fishing in or near the protected area is of major importance as a source of revenue	50-100%	Continuous use			✓				
Non-commercial water use is of major importance to subsistence	50-100%	Continuous use			✓				
Commercial water use is of major importance as a source of revenue	50-100%	Continuous use			✓	✓	✓		
The cultural and historical values are potentially important but this importance is currently not realised	5-10%	Regular but not continuous				✓	✓	✓	
Cultural and historical value are of minor importance as source of revenue	5-10%	Regular but not continuous			✓				
Recreation and tourism is of major value to human well-being	5-10%	Continuous use			✓	✓	✓	✓	
The protected area is of major importance in increasing knowledge	50-100%	Continuous use			✓	✓	✓		✓
Education is of potentially importance but this importance is currently not realised	50-100%	Continuous use			✓	✓	✓	✓	
The protected area is of major importance for education	50-100%	Continuous use							✓
The area is potentially important for carbon sequestration but this importance is not realised	50-100%	Not applicable			✓	✓	✓	✓	✓
The role of the protected area in soil stabilisation has major economic benefits	50-100%	Not applicable			✓	✓	✓	✓	
The protected area provides major non-economic coastal protection benefits	10-50%	Not applicable			✓	✓	✓	✓	✓
The protected area provides major non-economic flood prevention benefits	50-100%	Occasional			✓	✓	✓	✓	
The PA is potentially important for water quality	50-100%	Continuous use						✓	
The protected area provides major water quality and quantity benefits	50-100%	Continuous use			✓	✓	✓		

Khar-Us Nuur National Park, Mongolia

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Summary of benefits

- ✓ Wild food plants
- ✓ Fishing
- ✓ Livestock grazing and fodder collection
- ✓ Non-commercial water use
- ✓ Cultural and historical values
- ✓ Medicinal resources
- ✓ Recreation and tourism
- ✓ Knowledge, research and education
- ✓ Soil stabilisation
- ✓ Water quality and quantity
- ✓ Timber

Introduction

✓ The region

Mongolia is a country undergoing rapid change. The population has doubled in the last 25 years and government policy has increasingly moved towards industrialisation and economic development. Mongolia won its independence from China in 1921 thanks to backing from the Soviet Union and a communist regime was installed in 1924. Major changes came again in 1992 when Mongolia lost its only major source of aid with the fall of the Soviet Union. Political reforms began and parliamentary elections were held. Since 1996 power has shifted between the ex-communist Mongolian People's Revolutionary Party and the Democratic Union Coalition⁴⁰⁹.

Livestock breeding has always been an important part of the economy and accounts for between 70 and 75 per cent of total agricultural production⁴¹⁰. Not surprisingly the recent political and social changes have been reflected in the agricultural economy. Traditional grazing practices, based on a sustainable land utilisation system, were mainly lost and forgotten under the centralised economic system of the communist era. When in the 1990s Mongolia turned to a market economy, this centralised infrastructure collapsed, unemployment increased and livestock production was privatised. In response, a significant number of people left the cities and turned or returned to livestock agriculture. As a result, livestock numbers rose from 25.8 million heads of livestock in 1990 to approximately 33.6 million heads in 1999. But this rise in numbers was quickly followed by a downturn; and livestock decreased to 26.1 million heads in 2001. The direct reason for this reduction was that the loss of formerly sustainable practices led to overgrazing, which in turn led to pastures being degraded in vulnerable areas and therefore, becoming less productive. The indirect reasons included the dismantling of herding collectives (*'negdels'*) and the subsequent end of the grazing rules and regulations imposed by the collectives⁴¹¹ and the cessation of traditional rotation patterns, which were still being practised in some areas, due to fears of land occupation by neighbouring families. These problems were exacerbated by a growth in the number of goats as a result of the high demand for cashmere, particularly from the bordering Chinese market. Today many parts of the country are characterised by overstocking and overgrazing.

✓ The people

The Khar Us Nuur National Park is situated in western Mongolia. The people of this region belong to several ethnic groups including the Khalcha, the Myangad, the Dorwod, the Tuwa and the Oold, with the Khalcha being the dominant group.

The traditional form of land use in the area is semi-nomadic animal husbandry. However, the recent increase in the number of livestock and loss of traditional grazing practices, as noted above, are considered major causes of soil degradation and habitat destruction; both of which are having major livelihood impacts for local people.

✓ **The protected area**

A key element of Mongolia's nature conservation strategy is the goal to conserve permanently, by 2030, at least 30 per cent of its land and water area in a protected area network. So far, 60 protected areas have been established (48 of them designated or extended since 1992) covering an area of 21.58 million hectares – 13.79 per cent of the national territory (see sources and contacts).

The Khar Us Nuur National Park, situated in the Great Lakes Basin (or Depression) area of western Mongolia, represents a unique ecosystem, containing some of the last remaining reed beds in central Asia. The landscape varies from high mountains and steppe to semi-arid desert-steppe bordering diverse wetland habitats. This diversity of habitat is reflected in a variety of species and several globally endangered species survive in the region, e.g. the last remaining population of Mongolian saiga (*Saiga tatarica mongolica*) in the desert-steppe, the dalmatian pelican (*Pelecanus crispus*) in wetlands and the snow leopard (*Uncia uncia*) in adjacent mountains. The area is also the breeding ground or migration stopover for some 200 bird species, of which 10 are globally endangered and 21 nationally threatened.

The area has been home to biodiversity and people for centuries. Traditionally, nomadic herders grazed their animals over this vast region. Fragile grasslands were protected from degradation by rotating animals over shared pasture in a seasonal pattern. These herding traditions are continued in the park today, which contains two important grazing areas for large and small ruminants – goats, sheep, cows, horses and camels. The five *soum* (districts) and nine *bags* (small administrative units), which are located either partly or entirely in the park, include some 4,160 families (19,600 people), 75 per cent of whom are herding families. Additionally around 1,300 families (approximately 6,000 people) settle in the park on a seasonal basis bringing with them approximately 200,000 heads of livestock⁴¹².

WWF has been working in the area for many years, with activities linked to four overall objectives: strengthening the National Park's administrative capacity in terms of infrastructure and human resources; the sustainable management of natural resources; enhancement of buffer zone management through the development of social infrastructures and alternative income generation; and the participation of local people in conservation activities. It is intended that the park will become a model for community-based biodiversity conservation and natural resource management for other protected areas in Mongolia.

Protected Area Profile

<i>Name:</i>	Khar-Us Nuur National Park
<i>Location:</i>	Khovd <i>aimag</i> (province), Mongolia
<i>Objective:</i>	Reduce and eliminate pastureland overgrazing and unsustainable resource use by local people through co-management and participation Reduce and eliminate illegal hunting and upgrade biodiversity conservation
<i>Gazetted:</i>	13 June 1997
<i>Area:</i>	850,272 ha
<i>Management:</i>	Department of Protected Area Management, Ministry of Nature and Environment, Mongolia
<i>Land owner:</i>	State
<i>IUCN Category:</i>	II

Values and Benefits

The 'Collaborative Conservation and Management of Khar Us Nuur National Park' programme thus aims to maintain the unique ecosystem of the National Park by conserving and sustainably using the area's biodiversity resources, both in the park and its buffer zones, by minimising and mitigating threats, and by carrying out collaborative management activities focusing in particular on the different needs and interests of all stakeholders. As part of the programme, and specifically in relation to the process for developing the management plan, a comprehensive database on the park's socio-economic condition has been developed with local stakeholders. The information gathered by the programme and the Benefits Assessment Tool completed for the Park (see table 18 below) have identified a range of benefits that the park provides local people. The main benefits are discussed in more detail below.

✓ **Continuation of traditional livelihoods**

The main threat to the park, and to the well-being of its local people, are the environmental problems primarily caused by uncontrolled and unsustainable grazing as discussed above. National policy permits resource use and some level of economic activity in protected areas. Local people are thus allowed, for household use only, to collect local wild food plants and timber, and graze their animals in the park. There are however concerns that current use levels are unsustainable. Park managers and partners are thus working to identify the distribution of natural resources (e.g. fodder, fish etc.) and develop agreed procedures for sustainable resource uses, as well as train local people in sustainable resource use. Examples of these activities are given below.

- **Herding** is the local population's main activity. Stakeholders (including park managers, herders, *soum* and *aimag* (province) administration, rangers and scientists) have been collaborating on potential solutions to address overgrazing problems and to improve pasture management. To ensure sustainability of grassland the park administration negotiated land use contracts with all the herding families in 2002. To improve the living conditions of the herders and to give them the possibility of leaving the protected area in the summer, wells have been restored in several areas and a tripartite agreement with the local authority, herders and WWF concerning the use of the restored wells has been agreed. The protected area managers and partners are also supporting herder communities and cooperatives to generate more income, in particular non-livestock income, and to improve their livelihood.
- **Fishing** is important for those living within and in the buffer zones of the park. Currently the Ministry of Nature and Environment (MNE) gives the *aimag* unscientifically established annual fishing quotas; the *aimag* then allocate quotas to the *soum* and *soum* officials issue permits for fishing in the national park in order to fulfil quotas. Several surveys have been conducted to assess the current fish resource base and determine annual harvesting quotas in Khar Us, Khar, Dalai and Durgun lakes in the park. The survey revealed that the quotas were inappropriate, as were the fish licensing and monitoring systems in the park. Annual sustainable harvesting quotas for the lakes of Khar Us Nuur National Park have now been determined and in January 2000, workshops were conducted to develop agreements for appropriate fish resource use in the park signed by representatives from the protected area managers, Mongolian Ministry of Nature and Environment, *aimag* and *soum* governors and WWF.
- ✓ **Education and awareness-raising.** In May 2000 and 2004, workshops were organised among secondary school teachers from relevant *soums* on the participation and role of schools in the environmental protection and collaborative management of the National Park. As a result, ecological clubs and pilot schoolteacher networks have been established in all *soums*. A local newspaper reporting on activities in the National Park is published four times a year and an information centre has been established in the park.

- ✓ **Fuel:** Although timber collection for fuel purposes is allowed within the park, programmes have also been developed to identify and demonstrate alternative/renewable energy systems and efficient heating systems to reduce use of natural resources.
- ✓ **Tourism:** Although at present relatively undeveloped, ecotourism is seen as being an important source of revenue for all park stakeholders. Recommendations for tourism development have been made and projects to develop eco-tourism services, and in particular bird watching tours, are underway. A community group of herders has recently begun developing some eco-tourism activities in the Park.

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- Paper, *Freshwater Issues In Mongolia* by N Batnasan, WWF Mongolia Programme Office
- WWF Project Final Report, Conservation and Management of the Khar Us Nuur National Park and its buffer zone by Heino Hertel
- MNE, Protected Areas (official , non-published report of the MNE), August 2006

Table 18: Summary of PA-BAT for Khar-Us Nuur National Park, Mongolia

Use of the resource	Amount of PA involved	Amount of the year that activity takes place	Indigenous / traditional people living in the PA	Other local people living in the PA	Indigenous / traditional / local people near the PA	National population	Government	Industry	Global community
Collection of wild food plants is of major importance to subsistence	5-10%	Regular but not continuous	✓	✓					
Collection of wild food plants is of minor importance as a source of revenue	5-10%	Regular but not continuous						✓	
Collection of wild food plants is of major importance as a source of revenue	5-10%	Regular but not continuous			✓				
Fishing in or near the protected area is of minor importance to subsistence	10-50%	Occasional use		✓	✓				
Grazing and fodder collection is of major importance as a source of revenue	50-100%	Continuous use		✓	✓	✓	✓	✓	✓
Non-commercial water use is of major importance to subsistence	50-100%	Continuous use		✓	✓	✓			
Commercial water use is potentially important but currently not used	50-100%	Continuous use					✓	✓	
Cultural and historical values are of major non-economic importance	50-100%	Continuous use		✓	✓	✓			
Cultural and historical value are of minor importance as source of revenue	50-100%	Continuous use					✓		
Local use of medicinal resources could be potentially important	10-50%	Occasional use					✓		
Local use of medicinal resources is of minor importance to subsistence	10-50%	Occasional use		✓	✓	✓			
Recreation and tourism is of minor importance as a source of revenue	10-50%	Occasional use		✓	✓	✓		✓	✓
Recreation and tourism is of major importance as a source of revenue	10-50%	Occasional use					✓		
The protected area is of major importance in increasing knowledge	50-100%	Continuous use		✓	✓				
Research is a minor source of revenue	50-100%	Continuous use				✓		✓	
Research is a major source of revenue	50-100%	Continuous use					✓		✓
The protected area is of major importance for education	50-100%	Continuous use		✓	✓	✓	✓	✓	✓
Collection of genetic material is of potential important but currently not used	5-10%	Not applicable		✓	✓	✓	✓	✓	✓

Use of the resource	Amount of PA involved	Amount of the year that activity takes place	Indigenous / traditional people living in the PA	Other local people living in the PA	Indigenous / traditional / local people near the PA	National population	Government	Industry	Global community
The protected area has a minor non-economic role in soil stabilisation	50-100%	Not applicable		✓	✓				
The role of the PA in soil stabilisation has a major non-economic benefit	50-100%	Not applicable				✓			
The protected area provides major water quality and quantity benefits	50-100%	Continuous use		✓	✓				
The role of the PA in water quality and quantity has major economic benefits	50-100%	Continuous use					✓	✓	
Timber removal is of minor importance to subsistence	10-50%	Continuous use				✓			
Timber removal is of major importance to subsistence	10-50%	Continuous use		✓	✓				

Chitwan National Park, Nepal

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Summary of benefits

- ✓ Cultural and historical value
- ✓ Sacred value
- ✓ Recreation and tourism
- ✓ Knowledge and research
- ✓ Education
- ✓ Carbon sequestration
- ✓ Soil stabilisation
- ✓ Flood prevention
- ✓ Water quality and quantity
- ✓ Non-wood products

Introduction

✓ The region and its biodiversity

Nepal is a landlocked Himalayan country in South Asia. The population is 27 million, consisting of various cultures and ethnic groups. The official language is Nepali, but there are about a dozen other languages and about 30 major dialects.

Altitudinal change over a relatively small area has provided Nepal with extraordinary biodiversity richness and variety. But this diversity, and the many benefits it brings to the people of Nepal, is under threat from deforestation, poverty and poaching, to name but a few of the most pressing issues.

The country has an impressive network of protected areas (over 18 per cent of its total land area) but it is difficult for the island-like national parks and wildlife reserves to ensure the long-term survival of the country's large terrestrial wild animals; i.e. the wild Asian elephant (*Elephas maximus*), greater one-horned rhinoceros (*Rhinoceros unicornis*), tiger (*Panthera tigris*), leopard (*Panthera pardus*), Ganges river dolphin (*Platanista gangetica*) and swamp deer (*Cervus duvauceli*).

✓ People and protected areas

Nepal's protected area system came into being during the 1970s when the late King Mahendra endorsed the establishment of the Royal Chitwan Park and the Langtang National Park. Two categories of protected areas were provided for in the National Parks and Wildlife Conservation Act of 1973: 'National Parks' and 'Reserves', with a national park being defined as: "*an area set aside for the conservation, management and utilisation of animals and vegetation on lands together with the natural environment*"⁴¹³.

The establishment of Chitwan National Park led to the relocation of people who formerly resided in the area and today there are no villages inside Chitwan. In the years that followed the establishment of the National Parks and Wildlife Conservation Act in 1973, however it was realised that the support of local communities in developing countries like Nepal was crucial for the success of protected area management. The National Parks and Wildlife Conservation Act was thus amended in 1989 to provide a legal basis for establishing multiple use conservation areas with the help of NGOs to manage them.

The most significant mechanism for benefit sharing with local communities living near national parks in Nepal is through the Buffer Zone Management Regulation and Guidelines. Traditionally, the buffer zone is only a protective layer surrounding a protected area. However, Nepal's buffer zones have been developed to focus on the requirements of local communities likely to be affected adversely by conservation measures taken as a result of an area being declared as protected.

The buffer zone concept was introduced in Nepal in 1993 through another amendment to the National Park and Wildlife Conservation Act. The Act defines the buffer zone as, “a peripheral zone of a national park or reserve which can provide the local inhabitants with the privilege of regular consumption of the forest products”⁴¹⁴. Chitwan’s buffer zone extends five kilometres outward from the park boundary and today over 223,000 people live in the buffer zone in some 36,000 households in 35 villages.

A detailed socio-economic analysis of the Chitwan area in the 1990s, found that over 94 per cent of buffer zone residents depend on agriculture for their livelihood, with over 80 per cent of total annual household income coming from agriculture. However, 41 per cent of local people owned less than 0.5 ha of land. It is therefore not surprising that to supplement their livelihoods more than 78 per cent of buffer zone residents collected natural resources from the national park, including fodder for livestock (57 per cent of fodder was collected from the park), fuelwood for cooking and thatching grass for roofing. Fifteen per cent of households also grazed livestock in the park⁴¹⁵.

Activities in the buffer zone thus initially concentrated on providing alternatives to the park’s resources; the idea being that if local people are able to meet their requirements for fodder, fuelwood and other forest products, they would no longer need to utilise the park. Following the declaration of the buffer zone by the government, 22 Buffer Zone Community Forests (BZCF) were established to meet people’s basic forest resource needs and a further 30 BZCF are in the process of handover.

Communities living in the buffer zone also receive a percentage of benefits derived from tourism in the protected area and Village Development Committees (VDCs) allow for community decision-making and equitable benefit sharing mechanisms to be agreed. Although these initiatives are still in relatively early stages of implementation, people living in the buffer zone have been supportive of the concept of community participation in management decision-making and resource collection from the park has decreased.

Protected Area Profile	
Overview:	Chitwan National Park is an important refuge for a wide range of threatened species. The climax vegetation of the terai, the sal (<i>Shorea robusta</i>) forest, covers some 85 per cent of the park; but the cycle of flood, fire and riverine erosion provides a continually changing mosaic of grasslands and riverine forests in various stages of succession. Over 40 species of mammals have been described from the park area including threatened species such as the rhinoceros, tiger, wild dog (<i>Cuon alpinus</i>), sloth bear (<i>Melursus ursinus</i>), gaur (<i>Bos gaurus</i>) and hispid hare (<i>Caprolagus hispidus</i>).
Location:	In the Terai, southern-central Nepal, on the international border with India
Objectives:	1. Biodiversity conservation focussing on the protection of rhino and tiger 2. Revenue generation through protected area based tourism
Gazetted:	1973
Area:	932 km ²
Management:	Department of National Parks and Wildlife Conservation, Ministry of Forests and Soil Conservation, Government of Nepal
Land owner:	State
IUCN Category:	II

Values and Benefits

Although local people can no longer legally utilise the park for agriculture or cultivation, 50 per cent of the revenue earned by the national park is returned directly to the community around Chitwan.

Eco-tourism is the major source of revenue. Although political instability over recent years has meant that tourism to Nepal declined, the country is clearly a major tourist destination and Chitwan is one of the most popular destinations for foreign tourists. In 1994, 60,000 foreign tourists visited the park, this increased to more than 100,000 in 1998 and the total revenue earned by the park was NPR50.6 million (over US\$800,000). Tourist numbers dropped to 42,654 in 2005 but are now increasing again.

A study in the late 1990s found that despite high visitation rates at the time, the economic impact of ecotourism on household income was however limited to villages closest to the main park entrance. Of the estimated 87,000 people of working age living near the park, only six per cent of the surveyed households earned income directly or indirectly from eco-tourism⁴¹⁶. A study published in 2006 of two villages adjacent to Chitwan also found that inequalities in the distribution of the costs and benefits of the park had in some cases contributed to a widening of social inequalities among local people⁴¹⁷. Therefore as well as reported plans to improve infrastructure and facilities for tourism, there is clearly a need to examine in more detail how benefits are distributed and to ensure that equitable distribution policies are developed.

Chitwan is one of the most severely flood-affected districts in Nepal. Soil erosion, poor forest management and lack of awareness about environment management in the community have all contributed to the degradation of the local environment and increased susceptibility to natural hazards⁴¹⁸. The park, however, provides a range of environmental services such as soil stability, flood control and water purity. The buffer zone council also sets aside a fixed proportion of its revenue for flood victims in the buffer zones. The park also plays a role in mitigating the effects of climate change. Chitwan is largely composed of natural sal forest and natural regeneration of the forest has reduced grassland from about 20 per cent to 5 per cent today.

Other benefits from the park include the collection of thatching grass by local people for roofing; which is permitted once a year and is subject to a monitoring system with the local buffer zone user group members. The park also contains a shrine considered culturally important to the indigenous/traditional people living in the buffer zone. The national park authority allows free entry to these devotees for a period of 3-7 days in March every year to worship. A historical place described in the epic *Ramayan* is also within the national park and the sculptures and other items are registered by the Department of Archives. People visit this area on a regular basis.



Meeting between representatives of a buffer zone community, Chitwan park managers and researchers

Sue Stolton

Sources and contacts

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- Additional comments from Seema Bhatt, India and Santosh Nepal, Director, WWF Nepal
- A Landscape Scale Assessment of the Chitwan-Parsa-Valmiki Tiger Conservation Unit by Anup R. Joshi for WWF Nepal Programme
- Chitwan National Park and Buffer Zone Management Plan 2001

Table 19: **Summary of PA-BAT for Chitwan National Park, Nepal**

Use of the resource	Amount of PA involved	Amount of the year that activity takes place	Indigenous / traditional people living in the PA	Other local people living in the PA	Indigenous / traditional / local people near the PA	National population	Government	Industry	Global community
Cultural and historical values are of minor non-economic importance	5-10%	occasional use			✓				
Sacred values are of minor non-economic importance	5-10%	regular not continuous			✓				
Recreation and tourism is a potential benefit which is currently not realised	-	-			✓				
Recreation and tourism is of major importance as a source of revenue	10-50%	regular not continuous			✓		✓	✓	✓
The protected area is of major importance in increasing knowledge	5-10%	occasional use				✓	✓		✓
Research is a minor source of revenue	5-10%	occasional use			✓	✓	✓	✓	✓
Education is of potentially importance but this importance is currently not realised	5-10%	occasional use			✓	✓	✓		✓
The protected area is of major importance for education	5-10%	occasional use				✓	✓		
Educational activity is a minor source of revenue	5-10%	occasional use			✓		✓		
The protected area's contribution to carbon sequestration is potentially important	10-50%	-			✓	✓	✓		✓
The protected area provides minor benefits through carbon sequestration	10-50%	-				✓			✓
Carbon sequestration is a minor source of revenue	10-50%	-					✓		
The protected area has a major role non-economic in soil stabilisation	10-50%	-			✓				
The role of the PA in soil stabilisation has major economic benefits	10-50%	-			✓		✓		
The protected area is potentially important for flood prevention	5-10%	continuous role			✓	✓			
The protected area provides major non-economic flood prevention benefits	5-10%	continuous role			✓				
The role of the PA in flood prevention has major economic benefits	5-10%	continuous role					✓		

Use of the resource	Amount of PA involved	Amount of the year that activity takes place	Indigenous / traditional people living in the PA	Other local people living in the PA	Indigenous / traditional / local people near the PA	National population	Government	Industry	Global community
The protected area is potentially important for water quality and quantity	5-10%	continuous role			✓	✓	✓		
Collection is of non-wood products is minor importance to subsistence	5-10%	occasional use			✓			✓	

Białowieża National Park, Poland

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Summary of benefits

- ✓ Wild food collection
- ✓ Agriculture
- ✓ Cultural and historical values
- ✓ Recreation and tourism
- ✓ Research
- ✓ Knowledge and education
- ✓ Genetic material
- ✓ Soil stabilisation
- ✓ Flood protection
- ✓ Water quality and quantity
- ✓ Timber removal

Introduction

✓ The region

Białowieża forest straddles the border between northern Poland and Belarus. Originally, virtually this entire part of Eastern Europe was covered in forests like those in Białowieża. Those areas that have survived have been subject to long-term conservation over the centuries by Lithuanian princes, Polish kings and finally the Russian tsars, who were the last private owners of the forest from 1888 to 1915 when the whole forest was within the Russian Empire, and was protected as a hunting ground.

The Białowieża area has been part of many different countries over the centuries. Most recently, during World War I, the German army occupied the area developing it industrially for the first time, i.e. through timber operations and hunting some species almost to extinction. The area was again occupied by the Germans during World War II and after the war the forest was divided between Poland and the Belarusian part of the then Union of Soviet Socialist Republics.

✓ The people

Białowieża's complex history has contributed to a diverse local population, with inhabitants of the area today being a mix of Poles, Belorussians and Ukrainians of Catholic, Orthodox and Protestant religions. Before World War II the population was a mix of Polish, Belorussian, Russian, Ukrainian, Jewish and German people. During the German occupation many local people were killed, particularly Jews, and much of the infrastructure was destroyed.

Some of the local people are, or have been, foresters and local communities have traditionally earned their living from logging and timber processing, with additional money from mushroom and berry collecting. But currently more and more people earn their living from tourism services. Although no one lives inside the national park, about 100 people live within the wider biosphere reserve (see below) and some 3,000 people live in villages close to the park.

✓ The protected area

The Białowieża Forest is according to many analyses the most important lowland forest in Europe from a conservation perspective. It is situated in the transition between the boreal and temperate zone and represents the last remaining primary deciduous and mixed forest in the European lowland. It contains 58 mammal species, over 1,000 plant species, about 250 bird species and some 10,000 insect species, including 3,000 species of beetle. Some species are endemic to Białowieża, many others are in decline or extinct elsewhere.

Wild herbivores are a vital part of the forest environment (such as the European bison (*Bison bonasus*) pictured above), not just as components of biodiversity, but because of their significant role in the functioning of ecosystems and in shaping the overall landscape. Their role in the economy of the region can also be important, providing food and products for people, and more recently in sustaining a (trophy) hunting economy and as flag-ship species for eco-tourism.

The whole Białowieża Forest covers an area of 150,582 ha, 63,219 ha of which is on the Polish side of the border. Within Poland 10,517.27 ha is protected as a national park (including 5,726.1 ha under strict protection) and the remaining area is state owned with about 12,000 ha of nature reserves.

The Białowieża area has a long history of protection first as a hunting forest and then from 1921 as a nature conservation area. The original reserve in 1921 covered 4,594 ha and in 1947 the 4,716 ha Białowieża National Park was established. UNESCO included the park into a 10,517 ha Biosphere Reserve in 1977 and in 1979, it was also listed as a World Heritage Site. The World Heritage Site was enlarged in 1992, to 98,108 ha, through the inclusion of the protected part of the neighbouring Belarusian National Park. This was the first European transboundary natural World Heritage Site.

Protected Area Profile

<i>Name:</i>	Białowieża National Park
<i>Location:</i>	Podlasie Province, North-Eastern Poland
<i>Objective:</i>	Protection and preservation of nature (biodiversity, ecological processes) Encouragement of scientific, educational, cultural and tourism activities
<i>Gazetted:</i>	1921
<i>Area:</i>	10,517.27 ha
<i>Management:</i>	Park Director, within the Ministry of Environment's jurisdiction
<i>Land owner:</i>	The State
<i>IUCN Category:</i>	II

Values and Benefits

Over the years the main tensions in the area have been over the strict protection offered by the park and either disinterest in protection or outright opposition to the park as a perceived obstacle to regional development. In 2001, when questioned about conservation a local mayor summed up the problems: *“There is high unemployment in the forest communities, up to 18 per cent in some towns ... Frankly there are other priorities at the moment, such as the installation of proper water and sewage treatment systems, and heating for schools. We recognize the importance of conserving the forest for our own future prosperity, but the reality is that we first need funds in order to take the pressure off our own daily living.”*

The challenge for conservationists and development organisations was thus clear: protect this vital last remnant of Central European forest whilst building strong bonds between conservation measures and the local economy, in particular, by creating possibilities for tourism activities.

As noted in the summary of the Protected Areas Benefits Assessment Tool given below, Białowieża has a wide range of actual and potential benefits. Here we discuss the two most important groups of values: knowledge and community well-being.

✓ Knowledge and education

Due to the high degree of naturalness of some tree stands, their complicated age structure and species composition, the Białowieża Forest is considered to be an important reference point for forests throughout Europe. It is not surprising therefore that the Białowieża Forest is described as *“one of the*

*most intensively explored areas on Earth*⁴¹⁹. Research in the forest began at the end of the 18th century and in the 1930s regular monitoring sites were developed, which are still the focus of research today. Dozens of research programmes are carried out in the national park every year, and if you take a walk through the centre of the forest many trees are marked as having a role in this intensive research programme.

✓ **Community well-being**

Given the immense importance of the Białowieża forest the Polish government has long held plans to enlarge the national park to nearly 60,000 ha. However this proposal was originally met with strong opposition from the local communes who feared that greater forestry restrictions and other economic constraints would be detrimental to their livelihoods. In previous decades timber from the forest was an important source of income for local people.

WWF, and many other organisations, have supported the efforts to enlarge the Polish part of the park, while securing cultural values and economic needs of local people. Thus in recent years the Scientific Board of the park after consultation with all the interested groups, including WWF, developed “*Principles of the Białowieża National Park functioning after its extension onto the entire Polish side of the Białowieża Primeval Forest*”. The main purpose is to develop a park model which can reconcile all the requirements of nature conservation with social demands, so that it becomes a ‘park for life’, stimulating sustainable development for the region and is accepted by the local people.

Numerous activities have been developed in response to this initiative. Local communities are increasingly accepting tourism as a way of boosting the local economy through, for instance, creating specially designated cycle paths, renovating traditional houses into ‘bed and breakfast’ accommodation and developing local crafts. By the end of the 1990s some 96,000 tourists a year were coming to Białowieża to visit the forest, and numbers are increasing now that Poland has become part of the European Union (there are currently about 150,000 tourists per year to the area).

Although the park has not yet reached the criteria necessary for joining the PAN Parks certification scheme, a joint WWF/PAN Parks project ‘*Gateway to Białowieża*’ (<http://www.bialowieza.com>) is promoting sustainable tourism in the region. This e-commerce project, which started in 2001, has now been taken over by local people who over the years have found that the project can help them develop their businesses. The web site includes information on accommodation and eating in the area and is a ‘one-stop shop’ for tourists wishing to visit the forest. The site is available in Polish and English. There are currently 33 people involved in the project and this ‘localisation’ of the project is seen as an indicator of people’s growing awareness of the mutual benefits from cooperation between local businesses and conservation objectives.

Sources and contacts

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Table 20: **Summary of PA-BAT for Białowieża National Park, Poland**

Use of the resource	Amount of PA involved	Amount of the year that activity takes place	Indigenous / traditional people living in the PA	Other local people living in the PA	Indigenous / traditional / local people near the PA	National population	Government	Industry	Global community
Wild food collection is of minor importance to subsistence	10-50%	Continuous use		✓					
Agriculture is of minor importance to subsistence	5-10%	Occasional uses		✓					
Cultural and historical values are of minor non-economic importance	5-10%	Not applicable				✓			
Recreation and tourism is of major importance as a source of revenue	10-50%	Continuous use		✓					
Research is a major source of revenue	50-100%	Continuous use		✓					
The protected area is of major importance in increasing knowledge	50-100%	Continuous use							✓
The protected area is of major importance for education	50-100%	Continuous use							✓
Educational activity is a major source of revenue	50-100%	Continuous use		✓					
Collection of genetic material is of potential important but currently not used	10-50%	Continuous use				✓			
The area is potentially important for soil stabilisation	50-100%	Not applicable			✓				
The area is potentially important for flood protection	50-100%	Not applicable		✓					
The area is potentially important for water quality and quantity	50-100%	Not applicable		✓					
Timber removal is of minor importance to subsistence	5-10%	Not applicable		✓					

Udzungwa Mountains National Park, Tanzania

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Summary of benefits

- ✓ Fishing
- ✓ Commercial water use
- ✓ Cultural and historical values
- ✓ Sacred values
- ✓ Medicinal resources
- ✓ Recreation and tourism
- ✓ Knowledge, research and education
- ✓ Carbon sequestration
- ✓ Soil stabilisation
- ✓ Flood prevention
- ✓ Water quality and quantity

Introduction

✓ The region

Tanzania is a land of diverse landscapes – from the hot and humid shore of the east coast to the mountains of the northeast (including Africa's highest peak: Mount Kilimanjaro). Tanzania borders Lake Victoria in the north and Lake Tanganyika to the west. The centre of the country consists of a large plateau with plains and some arable land. About a third of Tanzania is covered by woodland with some forest. More than 120 ethnic groups make up the population of Tanzania, the majority of which has Bantu origins. The country is one of the poorest in the world (according to the 2006 Human Development Index it is placed 162nd out of 177 countries). The Udzungwa Mountains are part of the Eastern Arc Mountain region which stretches from southern Kenya to southern Tanzania.

✓ The people

The Udzungwa Mountains are home to a mix of many different tribes encompassing a range of livelihood activities. The National Park is set between two regional administrations: Morogoro on the East and Iringa on the West. The mountain range divides two very different types of communities: in the east is the densely populated and fertile Mang'ula ward on the alluvial plain of Kilombero famed for its agricultural production and in the west the more traditional villages practising subsistence agriculture along with resource collection from the wild⁴²⁰. Most of the communities living adjacent to the forests are neither asset-rich nor self-sufficient enough not to have to rely on the forests to some extent for both their basic needs and for income-generation activities. Population densities are quite high as the mountains are much wetter and the rains more predictable than in the surrounding lands.

✓ The protected area

The WWF Tanzania Programme Office with support from other WWF national offices started working on the conservation of the Udzungwa Mountains in 1991 and was instrumental in the upgrading of the area from parts of three forest reserves to a national park in 1992. The park includes important areas of Eastern Arc forest from about 500 m to over 2,000 m altitude, and is the first rainforest park in Tanzania. The mountains provide a sanctuary for many important plant, mammal, bird, amphibian, reptile and insect species. More than 2,500 plant species, of which some 160 are used locally as medicinal plants, and over 300 animal species have been recorded in the park, the latter includes 18 vertebrate species endemic to the Eastern Arc Mountains.

River catchments protected within the park are important for biological conservation and the socio-economic development of the country. The park is the catchment area for several major rivers in southern Tanzania which provide water for sugar cane plantations, rice fields and horticultural gardens just below the mountains as well as flood plains and irrigated fields used by thousands of farmers further downstream.

Protected Area Profile

Name:	Udzungwa Mountains National Park
Location:	Kilombero and Kilosa Districts in Morogoro Region and Kilolo District in Iringa Region
Objective:	Conserving 1) <i>Biodiversity value</i> : the Park harbours endemic, near-endemic and threatened species of plants and animals which need high protection and 2) <i>Economic Values</i> : the park is a major source of water for power generation and agricultural activities in the country.
Gazetted:	21/10/1992
Area:	199,000 ha
Management:	Tanzania National Parks
Land owner:	State owned
IUCN Category:	Category II

Values and Benefits

Successful conservation of the national park depends on the support of local communities. The adjacent communities are at least in part dependent on the park for their livelihoods and the national economy of Tanzania also benefits from park resources related to agriculture and power generation.

Unlike most other parks in the region, Udzungwa Mountains has developed resource use strategies with the local communities. When the park was established in 1992, a verbal agreement was made between the park and Kilombero district council to allow communities to collect deadwood, medicinal plants and thatching grasses twice a week (on Fridays and Sundays). This informal agreement expired in 2002, at which point WWF decided to undertake an assessment of the ecological and social impacts of resource collection on the park.

The ecological studies, using dung beetles as an indicator group, revealed a negative trend in the ecological diversity in areas where deadwood collection was most intense. The socio-economic studies however found a high dependency of local communities on deadwood from the park, which is the main source of energy for cooking and heating. There was also trading of deadwood from the park, especially for use in the local brewing industry. Several alternative sources of energy are already in use, but they account for a low percentage of the total energy. Previous efforts to encourage the local population to plant trees have not been very successful, mainly due to land shortages, but also in part due to complacency because of the free source of deadwood from the park. Poverty is another consideration, as many people cannot afford the price of alternative energy. The other two permitted activities (removal of grass for thatching and medicinal plants) were found not to cause similar disturbance to the ecosystem. The majority of respondents (95 per cent) to a survey carried out as part of the study had positive views about the conservation of the park. They agreed that the situation where people were allowed access to resources from the park could not be continued in its present form. However, there was a vocal minority (5 per cent of respondents) who were totally opposed to the idea of activities being stopped, having the view that the national park had taken land that was theirs.

The study recommended that deadwood collection from the park be phased out by 2011. The intervening period should be used to carry out a number of activities, including: an educational and public relations campaign, support to village authorities to formulate land use management plans which designate a larger proportion of land for tree planting, support to identify alternative sources of energy and increase the acceptance and use of alternative sources of energy already in place, and help in identifying more feasible income-generating schemes, so that the people around the park can afford other energy sources. Today, only women are allowed to collect deadwood once a week (Thursdays) from the park. Four community-managed forests have been established; tree cover in the villages has increased to 58 per cent and 25 per cent of households now use wood from their own planted trees.



Community tree nursery

WWF Tanzania

This initial community access to the park and subsequent involvement in discussions on future use has been credited for cementing the relationship between the park and local communities. Many projects have been undertaken to address conservation issues, including the promotion of environmental education in schools and communities adjacent to the park and support of alternative income-generating activities such as keeping bees, pigs, dairy cows and goats; harvesting mushrooms and participation in fish-farming projects. Other conservation efforts include erosion control and capacity building. Infrastructure development, including trails, campsites and ranger posts, has also taken place to promote tourism and has resulted in the park generating income for conservation and for the surrounding communities.

The Protected Areas Benefits Assessment Tool was completed for the Udzungwa Mountains National Park in June 2007 and is summarised in table 21 at the end of the case study. As well as the resource use issues discussed above, the park has a range of values and benefits which include:

- ✓ Water: As noted above the park is a catchment forest providing water for agriculture and power generation. The streams and rivers are also major tourist attractions. The park is a watershed protecting and stabilising stream flows, maintaining ecological cycles and micro-climates, ensuring nutrient cycling and soil fertility, controlling erosion and has a role in carbon sequestration. The park is an important source of water for the local communities who have observed that conservation of the park's forests has improved water resources. Outside of forest reserves, the forests have been largely cleared on agricultural lands, except for small locally protected forest patches that are used for burial grounds and for traditional ceremonial purposes.
- ✓ The park also has important cultural values, including sacred sites.
- ✓ Tourism is increasing with the number of tourists to the park increasing from 33 during 1992-93 to 2,348 during 2003-04 and 2,433 in 2006, but facilities remain inadequate. There are however plans to develop the tourism potential for the benefit of visitors, local communities and park management authority.
- ✓ The park is also important for knowledge, research and education. Locally WWF has collaborated with the park managers to help local schools by providing school textbooks, teaching educators to integrate environmental components into the classroom, organising school competitions, rehabilitating classrooms and teachers' houses, improving roads, and creating environmental awareness in the community. This helps, in turn, to produce students with higher marks for secondary school entrance.

Sources and contacts

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- The WWF supported report: Nyundo, B A, A Mtui and H Kissaka (2006): *An assessment of ecological and social – economic impacts caused by collection of deadwood, medicinal plants and cutting of grass for thatching in Udzungwa Mountains National Park*, Udzungwa Mountains National Park, Tanzania
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- Article by Zakiya M. Aloyce, Program Officer for Community and Social Conservation, WWF Tanzania Program Office on Integrated Conservation and Development in Udzungwa, Tanzania for the *Education for nature newsletter* April-October 2005 issue

Table 21: Summary of PA-BAT for Udzungwa Mountains National Park, Tanzania

Use of the resource	Amount of PA involved	Amount of the year that activity takes place in PA	Indigenous / traditional people living in the PA	Other local people living in the PA	Indigenous / traditional / local people near the PA	National population	Government	Industry	Global community
Fishing in or near the protected area is of major importance as a source of revenue	Near PA only	Not applicable			✓				
Non-commercial water use is potentially important	5-10%	Continuous use			✓	✓	✓	✓	✓
Commercial water use is of major importance as a source of revenue	5-10%	Continuous use				✓	✓	✓	
Cultural and historical value are of major importance as source of revenue	10-50%	Only occasional			✓	✓	✓	✓	
Sacred values are of minor importance as source of revenue	5-10%	-			✓		✓		
Local use of medicinal resources is of major importance to subsistence	-	-			✓				
Recreation and tourism is of minor importance as a source of revenue	10-50%	Not continuous			✓				
Recreation and tourism is of major importance as a source of revenue	10-50%	Not continuous					✓		✓
The protected area is of major importance in increasing knowledge	50-100%	Continuous use			✓	✓	✓		✓
Research is a major source of revenue	50-100%	Continuous use					✓		✓
The protected area is of major importance for education	10-50%	Not continuous			✓	✓	✓	✓	✓
The protected area provides major benefits through carbon sequestration	50-100%	Not applicable					✓	✓	✓
The role of the protected area in soil stabilisation has major economic benefits	50-100%	Not applicable			✓	✓	✓	✓	✓
The role of the protected area in flood prevention has major economic benefits	50-100%	Continuous use			✓	✓	✓	✓	✓
The protected area provides major water quality and quantity benefits	50-100%	Continuous use			✓	✓	✓	✓	✓
The role of the protected area in water quality and quantity has major economic benefits	50-100%	Continuous use			✓	✓	✓	✓	✓

Case study findings

Several issues arise from the case studies presented above in term of both the wide range of benefits that the protected area offers and the way benefits, in particular those used by the local community, are managed. The PA-BAT, and the case studies here, are specifically designed to discuss *legal* resource use and do not assess management effectiveness of either resource use or relationships with local people.

✓ Benefits

The first issue that stands out (see Table 14) when reviewing the case studies is the multiple benefits that all the protected areas provide (on average sites listed about ten separate benefits provided by the protected area). Of this small terrestrial sample all recognised values relating to recreation/tourism and knowledge/research and all identified the environmental services relating to soil stabilisation and water quality/quantity. Other than these constants, the sites offer a wide range of values depending on their location, biodiversity, cultural history etc.

The PA-BAT identifies benefits for a range of stakeholders from indigenous/ traditional people living in the protected area to the global community. Of specific interest to this report are those stakeholders living within or close to the protected area, and the benefits that the protected area offers them. Of the over 70 overall benefits documented for the seven case studies, just under half were considered by the assessors to be of major importance to the local communities (see Table 14). However less than half of these were important for revenue-raising; perhaps again reinforcing the need to ensure that analysis of the benefits of protected areas goes beyond just financial benefit.

Table 14: **Overview of benefits in the seven protected area discussed in the case studies above (those benefits assessed to be of major importance to local people are in bold and those which are also of economic benefit are underlined)**

La Aurora del Palmar, Argentina	Oulanka National Park, Finland	Kinabatangan Wildlife Sanctuary, Malaysia	Khar-Us Nuur National Park, Mongolia	Chitwan National Park, Nepal	Białowieża National Park, Poland	Udzungwa Mountains National Park, Tanzania
Carbon sequestration	Carbon sequestration	Carbon sequestration	Cultural and historical values	Carbon sequestration	Agriculture	Carbon sequestration
Knowledge and education	Cultural and historical values	Coastal protection	Fishing	Cultural and historical value	Cultural and historical values	Commercial water use
Livestock grazing and fodder collection	Fishing	Cultural and historical values	<u>Livestock grazing and fodder collection</u>	Education	Flood protection	<u>Cultural and historical values</u>
Non-commercial water use	<u>Livestock grazing and fodder collection</u>	Education	Knowledge, research and education	Flood prevention	Genetic material	<u>Fishing</u>
Recreation and tourism	Hunting	<u>Fishing</u>	Medicinal resources	Knowledge and research	<u>Knowledge and education</u>	<u>Flood prevention</u>
Soil stabilisation	Knowledge and education	Flood prevention	Non-commercial water use	<u>Recreation and tourism</u>	<u>Recreation and tourism</u>	Knowledge, research and education
Timber	<u>Recreation and tourism</u>	Increasing knowledge	Recreation and tourism	Non-wood products	<u>Research</u>	Medicinal resources
Water quality and quantity	Soil stabilisation	Recreation and tourism	Soil stabilisation	Sacred value	Soil stabilisation	Recreation and tourism
	Water quality and quantity	<u>Soil stabilisation</u>	Timber	Soil stabilisation	Timber removal	Sacred values
	Wild food plants	Water quality and quantity	Water quality and quantity	Water quality and quantity	Water quality and quantity	<u>Soil stabilisation</u>

La Aurora del Palmar, Argentina	Oulanka National Park, Finland	Kinabatangan Wildlife Sanctuary, Malaysia	Khar-Us Nuur National Park, Mongolia	Chitwan National Park, Nepal	Białowieża National Park, Poland	Udzungwa Mountains National Park, Tanzania
		Water use (commercial & subsistence)	Wild food plants (commercial & subsistence)		Wild food collection	Water quality and quantity

As has been discussed in previous chapters recreation and tourism strategies are seen as important for financial stability both for individual protected areas and for the local community in and around them. In this small sample however tourism/recreation is only credited with bringing economic gain to local communities in the two European and the Nepalese protected area.

✓ Management

All the case studies document a variety of management interventions, which aim to improve conditions for local communities. In particular these concentrate on balancing conservation of biodiversity with the well-being of the local community. In at least two cases, Khar-Us Nuur National Park and Udzungwa Mountains National Park, long-term resource use is being reviewed with practically full co-operation and support from the local community to ease pressure on the parks' resources whilst ensuring that the local people support resource use change and do not suffer as a consequence.

It is interesting to note that the two protected areas that scored maximum points for both biodiversity and poverty outcome indicators in the METT (i.e. Udzungwa NP and Oulanka NP) are from opposite ends of the HDI ranking list (see Table 14 above). This indicates that the development status for the countries within which the protected areas occur may not be the main influencing factor in achieving a balance between biodiversity conservation and poverty reduction. Other factors operating at a more local level, for example, the presence of sustained conservation and development programmes may have a greater impact in achieving something approaching a win-win relationship.

✓ Case study conclusions

Thus in developing the case studies above, we found that protected areas can clearly offer multiple benefits to a wide range of stakeholders. However, as discussed, and as can be seen from the case studies, there was a real disparity concerning the amount of information available, with some benefits being the subject of studies, research and assessment whilst others have never been investigated in detail.

The PA-BAT can therefore be a tool which not only aids identification of benefits but could also be used to develop further research and assessment of the variety of benefits individual protected areas can offer.

Chapter 8: Analysis and conclusions

Research efforts, rather than trying to find the “silver bullet” that will provide a quick and universal solution to problems of poverty and biodiversity loss, need to focus on the contextual details that make particular outcomes more or less likely.

Arun Agrawal and Kent Redford, *Poverty, Development and Biodiversity Conservation: Shooting in the Dark*

At the 1982 World Parks Congress in Bali, participants agreed that “*protected areas in developing countries will survive only insofar as they address human concerns*”⁴²¹. This report set out to discover if 25 years after this statement, protected areas can now be said to play a positive role in one of the most fundamental of human concerns, poverty reduction.

Protected areas have come a long way since the first ‘modern’ national parks were set up at the end of the nineteenth century. They are an evolving conservation tool, whose fundamental mission has been to protect nature, first in terms of landscapes and key species and more recently focusing on overall biodiversity. Today protected areas face new challenges: reconciling their ultimate objectives of biodiversity conservation with another fundamental global concern, to reduce poverty levels. Biodiversity conservation (through protected areas) and poverty reduction each aim to achieve a very distinct set of objectives, yet the two are intertwined. Because most protected areas are situated in rural areas and because many rural areas, particularly in developing countries, show higher levels of poverty, there is an obvious albeit complex link between the two.

Our research has thrown up something of a mixed bag of results. On the one hand, protected areas can clearly provide important benefits that help to address issues of poverty. Sometimes these include direct economic benefits, although probably more often they are linked to other aspects of well-being, such as the provision of food and pure water, maintenance of health and benefits linked to cultural and spiritual values. Sometimes they also play a direct role in poverty *reduction*, but more commonly they provide a *safety net* for some of the world’s poorest people to stop them falling further into poverty and providing them with some of the prerequisites for improving their lifestyles. In other words they contribute to the wider aspects of poverty increasingly recognised by analysts more than they do to poverty reduction in the sense of increasing the number of dollars people earn a day. A report on poverty and conservation from IUCN sums up the differences: “*Not all conservation can contribute to poverty reduction. Some conservation activities appear to have little obvious relationship to poverty and livelihoods ...But where conservation and poverty intersect, conservation can do much more to contribute to poverty reduction, simply because natural resources are important for livelihoods and human well-being*”⁴²². A similar pattern emerges in studies of other natural resource management approaches, such as community-based forest management systems. The safety net role that protected areas and other more or less natural systems play in stopping people from getting caught in life-threatening levels of poverty can be critically important, but is still slightly different from providing mechanisms for large-scale poverty reduction in financial terms, as demanded by many politicians and donor agencies.

Conclusions

Clearly the relationship between protected areas and poverty is both complex and multi-faceted. In some cases the creation of a protected area has undoubtedly contributed to poverty, while in other situations protected areas have played a positive role in its reduction.

There are no simple formulae for success. Mechanisms that have worked to reduce poverty in one protected area may have failed in another. Some approaches to reducing the impacts of establishing protected areas on poor people have succeeded in one place but failed in another. Some poor people may recognise the positive benefits of protected areas and welcome or even initiate their establishment while others remain opposed to the whole

concept. In some cases local people are the instigators of protected areas, whilst in other areas the people concerned are far removed from the land where protected areas are set up.

This report does not offer any easy solutions to the issues raised ... in reality, as the quotation above states, there is no 'silver bullet' that will ensure that protected areas are both effective at conserving biodiversity and successful at delivering poverty reduction in all circumstances. The following broad conclusions, which are discussed below, lead on to a number of recommendations in the final chapter.

There is an evolution of approaches to integrating the needs of people and nature in protected areas, from 'no linkage' to 'direct linkages'. Historically, people were seen as a threat to biodiversity conservation and often removed from newly established protected areas (no linkage). Today, a more encompassing approach (direct linkage) is being promoted by many as the only way of achieving sustainable biodiversity conservation in many situations⁴²³. Thus while protected areas are not a poverty reduction tool *per se*, it is increasingly recognised that under certain conditions they may have a role to play in delivering direct economic benefits including poverty reduction. As efforts are being made to ensure ecological representation within protected areas, and more productive and economically important ecosystems are expected to form a greater proportion of the protected area system, this role may increase.

Lessons learnt from ICDPs and from the GEF suggest that 'win-win' solutions are difficult and that trade offs may be necessary. Within specific protected areas it will generally be difficult to meet simultaneously a wide range of conservation and poverty reduction objectives. Thus trade offs may often be required. In a wider landscape it may be easier to come at least closer to the 'win-win' situation of combining biodiversity protection with poverty reduction. Furthermore, what may work at a given point in time can easily turn into a failure without careful monitoring and adaptive management. Even those protected area community projects that start with the best of intentions frequently end up failing the poorest due to the prevailing political and economic conditions. Poverty reduction programmes that take place in conditions of weak governance and widespread corruption have far more barriers to success than those taking place in stable societies with good governance. These challenges are not confined to protected areas; as discussed in the introduction there is a growing gap between rich and poor in many countries and individual projects are hard pressed to address this. Success or failure needs to be contextualised more widely than simply by looking at an individual site or project

Goals such as that of the CBD's strategic plan (Decision VI/26) to "*achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on earth*" portray an ideal, but achieving these dual goals may not always be easy. One of the problems with many Integrated Conservation and Development Projects is that, often under pressure from their donors, they promised far more than was possible to achieve. Realistic goals, taking into account individual circumstances and opportunities, are likely to be better than projects that promise the Earth and then fail to deliver.

Monitoring is critical and it is important to be clear about what is being measured. Monitoring is needed for all aspects of protected area management, to ensure that plans are being implemented and management activities result in the achievement of objectives. Research shows that a good monitoring and evaluation system is one of the key factors in successful projects, through its role in facilitating adaptive management⁴²⁴. This applies to ecological monitoring of indicators such as species population and health, climate data and vegetation analysis, but also to social and economic indicators, such as community well-being, sustainable resource use and economic performance. In cases where it is hoped that local communities will gain significant benefits as a result of the protected area, they should be involved in the selection of at least the social indicators, so that project planners can be sure that stakeholders' primary concerns are included in monitoring and evaluation.

Social and economic monitoring is often inadequate and the ability to assess the protected area's real impacts on welfare and poverty reduction is limited. Without adequate measures and baselines it is very difficult to attribute

either reductions or increases in poverty to protected areas. A review of 37 studies that claimed to have achieved both poverty reduction and biodiversity conservation through specific programmatic interventions, such as ecotourism, prompted the authors to conclude: “*The vast sums channelled toward joint achievement of poverty alleviation and biodiversity conservation are all the more remarkable in light of the basic lack of evidence on the extent to which these goals can jointly be reached*”⁴²⁵.

With definitions of poverty in constant flux, it is a challenge to develop and monitor poverty reduction activities inside or outside protected areas without an agreed definition or end goal. We found that the DFID multi-dimensional approach used in this report serves as a useful starting point to identify the different angles of poverty. Equally, the IUCN definition of a protected area and associated management categories, combined with individual protected areas’ management plans, serves to frame the objectives of the protected area in question.

Good examples of effective protected area management combined with poverty reduction strategies need to be measured and replicated. A key challenge, where success has been achieved and verified in effective protected area management and poverty reduction strategies, is to ensure that examples of best practice can be replicated. A more rigorous approach to measuring the impact of protected areas on poverty reduction in its widest sense will also aid in the collection and dissemination of lessons and best practice. For example, total valuation studies that show protection strategies offering more benefits than costs to local communities have helped to change local perceptions in a number of countries. But adoption of new approaches seldom happens simply by example. Replication is generally neither an automatic nor a simple process, but one that involves time and resources in terms of publicity, extension and capacity building. The Protected Area Benefits Assessment Tool developed to help this particular research project offers one option for collecting information on benefits but more detailed studies are also required.

If poverty is understood as a multi-dimensional state rather than just a question of income, then protected areas have more chances of contributing to poverty reduction. The traditional and widespread measure of poverty with a threshold of US\$1/day is very limiting. Its appeal lies in its ease of measurement. Nonetheless, increasingly, broader and arguably more realistic, definitions of poverty are being applied. Such multi-dimensional approaches to poverty and well-being give a more realistic picture of the real and potential role that protected areas play in reducing poverty. This is particularly true as both people’s needs and the potential role that wild biodiversity can play in addressing these will evolve over time. Thus, biodiversity may be able to contribute to one aspect of poverty reduction at one given time and to another at another point in time.

Not only is the generation of benefits important, but their distribution is also key. In looking at the links between protected areas and poverty reduction we need to separate out the generation of benefits from the way in which they get distributed, if we are really going to understand who benefits from protected areas. The fact that a protected area generates benefits does not necessarily mean that the poorest members of a society get their fair share. Often benefits fail to reach some of the very poorest within groups, such as ethnic or religious minorities, women or the elderly. On the other hand, the cost of establishing protected areas has often fallen squarely on the shoulders of poor people⁴²⁶. These inequalities appear between countries, within countries and within households. Indeed, many examples show the majority of benefits accruing to the better off, whether at the scale of a foreign-owned ecotourism company reaping healthy profits and paying local workers very little, or the better-off members of a community next to a protected area getting the lion’s share of compensation packages, trust funds or start-up projects. While for those people the benefits of a protected area really may outweigh the costs, for the poorest people the impacts of crop damage and loss of resources will often mean that the net result of a protected area is that they are worse off than before. These inequalities are often rooted in larger inequalities in society including weak governance that provides little support for the politically or physically weakest people.

Each situation is unique. People are different, their approach to nature is different, their level of poverty is different, their degree of precariousness is different, and their trust and faith in protected area management and government policies and legislation is different. Protected areas will also vary enormously in the contribution

that they can make to local people's well-being. The term 'protected area' encompasses an enormous variety of situations: in terms of size, biodiversity, degree of threat, governance, management approaches, staff capacity and overall objectives. All of these factors will colour the relationship between protected areas and poor people and therefore the ability of protected areas, and even their appropriateness, to contribute to poverty reduction. While good examples can and should be disseminated so that lessons learnt can be of value to a broader audience, each situation needs to be treated as unique. It is all too easy to extrapolate from a single case study⁴²⁷.



Traditional bee-keeping. Baima tribal community Sichuan Province, China

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Periods of transition when people are moving in and out of poverty are particularly sensitive. Like everything, poverty is not static: *"People move in and out of poverty over seasons and years, hence the longer the time perspective, the more poverty will appear"*⁴²⁸. This adds to the complexity when attempting to manage protected areas in ways that can achieve some elements of poverty reduction. There may be a punctual need for very specific management approaches to address poverty. For example, when refugees flood into a protected area, management approaches may need to be adapted (e.g. identifying areas for fuelwood plantations to mitigate deforestation of the protected area), or a refugee crisis can develop into an environmental crisis⁴²⁹. Seasonal nomadic activity may also need to be taken into account in adapting protected area management over a given period (for example, see the case study from Mongolia). In addition, resource use in a protected area may change over time as people transition from subsistence lifestyles to other livelihood opportunities.

The well-known Environmental Kuznets Curve suggests that environmental quality declines as income rises until income reaches a certain level, at which point environmental quality improves; i.e. that societies are likely to go through a period in which environment receives less attention as they move away from extreme poverty⁴³⁰. Thus resource use agreements may have to change over time as people move from, for example, subsistence agriculture towards livelihoods centred on tourism or handicrafts or as people migrate from the country into the city. Agreements that work one year may not be suitable the next. Maintaining environmental quality during the transition from extreme poverty is essential but a considerable challenge. Flexibility and constant review are both required by protected area management to adapt to and support the temporal needs of poor rural people.

Protected areas are frequently not integrated with other sectors. Protected areas, in common with broader conservation strategies, often remain isolated from other important policies. For example, the Millennium Development Goal on the environment is clearly separate to the others, whereas in fact the environment should be integrated across all MDGs. Conservation needs to be seen within the context of development (and vice versa). Protected areas stand more chance of meeting their conservation objectives if they are firmly ingrained in the political and development priorities of a country⁴³¹.

Responses to biodiversity loss have tended to be focused on establishing protected areas. Equally responses to poverty have tended to focus on aid (food or otherwise) and other short-term responses. Such narrow sectoral approaches have served to maintain the dichotomy between people and biodiversity, rather than seek better to integrate the two⁴³². A better understanding of all the benefits associated with protected areas, and the various values associated with human well-being can help identify any linkages between protected areas and the local,

and global, population. Despite a welcome increase in attention from economists, there is still much to be learned about the values of protected areas and how these values are distributed amongst human populations.

Protected areas should be viewed as elements of overall landscapes. Displacement of people to make way for protected areas has often led to intensified land use immediately around the park, with the result that natural corridors and buffer zones are of poor or limited biological value⁴³³. What happens around a protected area may have as much significance to its viability and to poverty reduction as what happens inside it.

Projects that have focused exclusively inside the boundaries of a protected area, ignoring the interface with surrounding areas, are more likely to face pressure⁴³⁴. On the other hand, protected areas that are better integrated into the overall landscape mosaic and are able to play a contributing role to wider landscape level objectives, will probably have a greater chance of meeting their biodiversity objectives while supporting other poverty-related objectives within the same landscape. The more that local communities know about and are involved in the management of the protected area, the less it is likely to be perceived as an alien presence and more as one part of the wider landscape. Increasingly larger landscape approaches to conservation are being promoted as ways of reaching more acceptable trade offs between conservation and development. A review of the impact of ICDPs suggested that the most successful ones were indeed those that used the landscape level as their functional unit⁴³⁵.

Land ownership/management agreements play a fundamental role. The rural poor are often characterised by a lack of access to or tenure over land. Secure access to land not only provides greater food stability, but also brings with it greater access to funds (with land as collateral) and a greater role in national politics⁴³⁶. Ultimately, access to land brings with it a greater sense of responsibility and longer time horizons, which are all usually beneficial to conservation objectives. Unfortunately, in the past many protected areas have served to place a distance between rural communities and land, sometimes shattering traditional patterns of land use that had existed for hundreds of years.

The issue of land ownership and rights to land has plagued the conservation world for decades. It is complicated in many societies in that tenure rights to a particular piece of land or water may be fluid, change over time, or be different for different resources. But unless positive models are promoted and applied, it will be difficult for protected areas to achieve their aims and avoid having a negative impact on poverty reduction. *“Take the situation of indigenous peoples, who often suffer the most severe poverty. Self-determination as a people is one of their most pressing demands ... Their self-determination also depends crucially on control of their ancestral lands and the natural resources these lands contain. Thus conservation of the environment is often closely tied to protection of their livelihoods.”*⁴³⁷ Yet there are a growing number of positive experiences, where local people have worked with conservation agencies in establishing protected areas as outlined in various places in this report. Learning from and building on these positive experiences is one of the most urgent tasks in building a functioning global protected area system.

Mechanisms to equitably transfer benefits from protected areas are necessary. The CBD Programme of Work on Protected Areas has defined a specific target to *“Establish by 2008 mechanisms for the equitable sharing of both costs and benefits arising from the establishment and management of protected areas”*⁴³⁸.

While benefits from protected areas can be transferred in various direct or indirect ways, attempts are increasingly being made to find innovative and equitable mechanisms. Community funds can serve as a conduit for the transfer of cash raised through a protected area, for example as a fixed percentage of park entrance fees. This is the case in Uganda, Kenya and the Philippines and in many other of the examples highlighted in table 4, Chapter 4, where benefits (in this case especially financial) were able to flow to poor people because there was some sort of structure or organisation facilitating the transfer of benefits⁴³⁹. At a more local scale, Payment for Environmental Services schemes are increasingly being tested and used to transfer benefits obtained from protected areas to those responsible for protecting them, although the number of operating schemes remains low.

The challenges involved in achieving a balance between conservation and poverty reduction must be acknowledged and managed. It is clear from the discussion above that ‘win-win’ solutions, where both people’s livelihoods and the environment are improved, are not easy to achieve. In many instances, attempts to do this (or assumptions that it would automatically happen) have led to imbalanced results with, at best, either people or the environment gaining but not both. Because people’s perceptions of what it is to come out of poverty can differ significantly from place to place, and because their ultimate dream of a better life is often very different to the aims of biodiversity conservation, trade offs will be inevitable.

It is highly unlikely that the goals of poor people will match exactly with those of conservationists and of a protected area strategy. In relation to this, protected areas which include social/cultural objectives (especially those which match IUCN categories V and VI) are more likely to provide ‘win-win’ scenarios. In fact, the 1990s saw a significant increase in protected areas in category VI which seeks to better balance biodiversity aims with human needs⁴⁴⁰. However, it is by no means certain if these provide the best biodiversity conservation and a protected area network made up entirely of categories V and VI may well be insufficient to conserve a nation’s biodiversity. In practice a range of management objectives and governance types will be needed and the shape and management of individual protected areas will need to be worked out on a case by case basis, influenced by the richness and fragility of the biodiversity, the needs of the resident or nearby communities, land and water management outside the protected areas and so on. What is important for effectively managing trade-offs is to ensure that the negotiation process is fair and brings the right people around the table for an honest process⁴⁴¹.

Appropriate national governance aids successful poverty and protected areas strategies. Protected areas cannot address a whole suite of difficult and long-term problems on their own. As mentioned above, many attempts to do so fail because a minority dominate the decision-making process or are strong and ruthless enough to grab a major share of whatever benefits are available. Poor national governance affects both people and protected areas. In countries where corruption is rife and power abused, both poor people and natural resources end up suffering⁴⁴². Thus, for example, many mining and logging concessions are granted to large external companies, superseding the interests of poor rural communities and often set up with no proper environmental impact assessments. This is often also at the cost of protected areas and their buffer zones.

A GEF study identified that projects are more likely to fail if there is no proper and supportive institution and political framework in place. “*National policy and legislative reform and/or synergies are often necessary to enable and sustain local benefits for conservation*”⁴⁴³. Related to that, government policies should be supportive and in line with objectives to meet both poverty reduction and biodiversity conservation goals. If however, government policies focus on exploiting resources without considering these two objectives, then chances of success will be limited. For example, Indonesia in the late 1980s focused its export policy on pulp and paper at a cost to its natural resource base and to protected areas in order to raise foreign currency at a time when the region was facing an economic lull⁴⁴⁴.

Good governance also needs to be set in a framework of strong government policy that supports poverty reduction strategies. Despite huge amounts of rhetoric, such policies are rare and in most countries the gap between the richest and poorest continues to expand, whatever the political colour of the ruling party. A recent survey of ‘pro-poor’ policies relating to forest management for instance concluded that: “*Policy and practice has largely ignored the highly differentiated and unequal structures within rural communities and ignored the rapidly increasing levels of inequality now being documented across the world, including in areas that were previously considered to be less unequal...*”⁴⁴⁵.

Governance therefore decides to a large extent whether efforts to combine social and biological priorities within protected areas succeed or fail. Governance is important at two levels. At a national level, policies, legislative structure and the rule of law all should be strong enough to provide poor people with the framework they need to break out of poverty. At the individual level of the protected area, governance needs to be strong enough and well enough respected to provide assurances for the people most directly affected by protection. In many cases

this may be best approached by looking at governance models that break away from the traditional state-owned and state-run protected areas, such as community conserved areas and co-management approaches. In other cases government-run protection may be the best option, but with a more inclusive, listening approach than has often been the case in the past. Without good governance, attempts to link poverty reduction and protected areas are likely to fail and we risk protected areas remaining as guarded and threatened enclaves, rather than as positive and welcome elements within the landscape and seascape.

Chapter 9: Recommendations – how protected areas can contribute to poverty reduction

Our analysis has focused on one rather narrow but important aspect of the twin debates about poverty and the environment: how protected areas and the projects associated with them can best respond to the unacceptable conditions of poverty affecting many of the people who live in and around them. Like all the ‘*Arguments for Protection*’ series, this is not aimed to be just an academic exercise but rather to draw on experience from around the world to provide insights into how management approaches might be developed. The following recommendations have been divided between those relating to a number of different interest groups but there is considerable overlap – for example many of the recommendations for conservation and development organisations are relevant to both. We have also highlighted where these recommendations link with activities in the CBD’s *Programme of Work on Protected Areas*, which is currently the focus of many national and international protected area strategies¹⁵.



Subsistence fishing co-exists with ecotourism
Mafia Island Marine Park Mafia Island,
Tanzania

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Overall recommendations

1. **Appropriateness**: There is a need to **frame clearly what protected areas can and cannot contribute to poverty reduction**. It is important to be explicit about both the type and scale of contribution that protected areas can make to poverty reduction strategies. This does not mean that every protected area should aim to meet poverty reduction targets, nor more broadly that all protected areas should contribute explicitly to social goals – the functions in some cases are completely different – but that where the two go together the objectives, targets and beneficiaries need to be explicit.
2. **Types of poverty**: **In planning the contribution of protected areas to social goals, wider definitions of both poverty and well-being should be applied**, as outlined in this report (see Chapter 3), to understand better the different benefits available from protected areas. Those involved in protected area development need to be transparent about what elements of poverty can be addressed and which groups (e.g. women, farmers, indigenous people etc.) are targeted by particular projects or by the existence of a protected area.
3. **Partnerships**: In cases where protected areas aim to contribute to poverty reduction targets, **strong and functional partnerships are needed between the different sectors involved** (conservation and development communities, government agencies and local people’s groups) to implement fully integrated projects with clear goals and measures of both biodiversity conservation and poverty reduction (see CBD *Programme of Work* activity 2.1.4).

¹⁵ We discuss the CBD’s Programme of Work on Protected Areas (POWPA) in Chapter 2. The POWPA contains over 90 specific, time-limited actions for governments and partners to undertake. The bracket notes in this section relate to the specific actions which relate to the recommendations discussed. The full POWPA can be found at: <http://www.cbd.int/decisions/default.shtml?dec=VII/28>

4. **Stakeholders**: Such cross-institutional partnership requires dedication, skills and in some cases the setting aside of long-held prejudices. It is important to **identify all the stakeholders who should be involved in consultation and decision-making and to ensure that key stakeholders are not omitted** (see CBD *Programme of Work* activities 2.2.1-2.2.5). It is particularly important in this respect to ensure that representatives of the poorest and most marginalised groups of people are involved in these partnerships.
5. **Compensation**: When creation of a protected area for the global good will result in reduced well-being for local communities, some **creative long-term compensation packages may be needed**, designed in collaboration with the recipients and delivered in ways that ensure equitable distribution amongst those affected (see CBD *Programme of Work* activity 2.1.1).
6. **Lessons learned**: **Careful monitoring is needed to find out what works and what does not work**, including care in setting baselines. Continued identification and publicity about successes and failures can help to create a learning environment and better practice (see CBD *Programme of Work* activities 1.4.8 and 4.1.5). The role of institutions such as IUCN's Commission on Environmental, Economic and Social Policy (CEESP) and the CBD's Clearing House Mechanism are important in this effect.
7. **Distribution**: **The benefits, and to a certain extent, costs, of protected areas should be equitably distributed**. Target groups need to be carefully identified and understood so that they can be effectively reached. Careful monitoring and adaptive management should help to ensure that it is not always the same small group that benefits from protected areas.
8. **Future trends**: An already complex set of challenges is made even more difficult by taking place in a world that is changing rapidly. **The impact of emerging trends such as urbanisation and climate change on both poor people and biodiversity need to be considered**, tracked and adequate responses developed – such issues need to be addressed explicitly at the planning stage in projects and periodically during their implementation.

Recommendations relating to local communities

1. **Involvement**: Under the agreements within the CBD *Programme of Work on Protected Areas*, local communities have an increasing opportunity to be involved in decisions about the location, management objectives and governance approaches of new protected areas (see goal 2.2). **Communities should therefore be proactive in suggesting, engaging with and understanding conservation approaches and governance types that work best for them** and promoting these within conservation strategies.
2. **Organisation**: **Effective involvement requires good community organisation** (for example to ensure that a few powerful stakeholders do not dominate debate and decision-making).
3. **Prior Informed Consent**: In particular, under the CBD *Programme of Work* (see activity 2.2.5), and in relation to the recently adopted United Nations Declaration on the Rights of Indigenous Peoples⁴⁴⁶, **governments and others should seek prior informed consent before any resettlement** of indigenous peoples or local communities from existing or proposed protected areas.
4. **Knowledge**: Some protected areas have high biodiversity precisely because of the long-term stewardship by local communities. Here **continuing partnership, through co-management or Community Conserved Areas, may address both conservation and poverty**. Keeping and sharing traditional knowledge relevant to natural resource management can be an important element in success in any protected area approach (see CBD *Programme of Work* activity 1.1.7).

Recommendations relating to the conservation and development community

1. **Research:** More rigour is needed in setting objectives and monitoring impacts in order to assess clearly cause and effect between poverty reduction and protected areas. We still need to know much more about the links between poor people and protected areas: the research summarised in this report shows that some of the supposed links between conservation and poverty reduction are not backed up by sufficient data, while in other cases opportunities to address both issues simultaneously are currently being lost for lack of understanding. **Focused research efforts are needed** (see *CBD Programme of Work* activities 4.4.2 and 4.4.4). As we have seen, there are many myths and beliefs around the relationship between protected areas and poverty, but to date, little conclusive evidence. Research such as the study conducted by Wilkie *et al*⁴⁴⁷ in Gabon (see literature review in Appendix 1) needs to be replicated far more widely to help to determine truly the extent of the role that protected areas can play in poverty reduction strategies in different circumstances. Wherever possible and appropriate, methodologies to assess management effectiveness of protected areas should ensure full consideration of issues relating to well-being and poverty reduction. We provide one cheap and simple way to start building up information through the **Protected Areas Benefits Assessment Tool** developed for this project.



Bertin Tchikangwa, who leads a project with Bagyeli pygmies in the buffer zone of Campo-Ma'an National Park, Cameroon which is increasing participation in the national park's management, agreeing access to the park for traditional rites and harvesting of NTFPs and other land rights issues.

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2. **Measuring progress:** As part of information gathering, **adequate measures are needed, including common indicator groups that cover both conservation and poverty reduction** and also measure overall protected area management effectiveness (see *CBD Programme of Work* goal 4.2 and activity 4.1.2). WWF and its partners have developed a range of tools that can help to implement such assessments; but more work is required on the social indicator elements of these tools.
3. **New approaches:** Although strictly protected areas will remain at the heart of most conservation strategies, there is a wide range of other options available that may be particularly useful in cases where conservation and poverty reduction necessarily go hand in hand. **Projects need to consider the whole range of IUCN management categories and governance options of protected areas in developing plans.** These include landscape / seascape approaches and extractive reserves (IUCN Categories V and VI) and a variety of different governance approaches including Community Conserved Areas and various co-management options (see *CBD Programme of Work*, for example activities 1.1.4 and 2.1.3).
4. **Managing for different values:** When there are people living inside or close to protected areas and where resources from the protected area are utilised, there is a need to develop management objectives which **encompass all the associated values:** i.e. natural, social, cultural and economic. Very different skill sets are involved and this is an area where partnerships can be useful – between different government departments for example, or between conservation and development NGOs, but also possibly with less traditional partners such as the private sector, religious groups and – always – with local stakeholders.

A key step to success in using protected areas to address poverty issues is to **understand and measure the additional benefits that protected areas can provide** (e.g. clean drinking water, fish breeding grounds or

protection against sea-level rise) and to match these with specific needs to address poverty. The Protected Areas Benefits Assessment Tool, and a wide variety of more detailed assessment methodologies, can help to achieve this (see *CBD Programme of Work* activities 2.1.4 and 3.1.2).

5. **Capacity building:** Protected area managers are expected to have an increasing level of understanding of the needs and significance of poor rural people and to consider them actively and early on in their planning and management processes. This implies that **social issues should receive greater attention in training programmes for conservation professionals (both those working for large international NGOs and local organisations), protected area managers and rangers**. Partnerships with wildlife training colleges and the International Rangers Federation could help to achieve these aims.
6. **Focused targets:** Our research suggests that some projects fail because the aims are set unrealistically high – a single project is supposed to give major gains for biodiversity and poverty reduction, often in very unsympathetic circumstances. **A more focused approach, with a small number of deliverable conservation and social targets**, may be more realistic in these circumstances.
7. **Participatory approaches:** **Protected area creation and management can seldom be rushed**, strong protected area networks need popular support and that takes time to negotiate and build. Conservation and development organisations involved in protected areas need to be committed to devoting sufficient time to the process of agreeing the trade offs that are inevitable when conservation has to take place in the context of multiple pressures on land and water. Such negotiations involve a suite of specialists including, in addition to conservation biologists, people trained in social development issues and often conflict resolution.

Recommendations relating to the private sector

1. **Benefit sharing:** Protected areas usually only maintain their values in the long-term if they are supported by local communities, which presupposes that local people do not suffer losses as a result of protection and ideally that they gain net benefits. **Businesses that rely on the natural capital in a protected area should consider passing more benefits to those communities most directly affected by protection**, for example by integrating operations more closely with communities, providing employment, PES schemes or direct compensatory payments and other forms of benefit.
2. **Intellectual property rights:** In cases where commercial businesses are making a profit from the knowledge, genetic material or environmental services coming from protected areas, it is important to **develop individual agreements, drawing on national legislation, to ensure that protected area authorities and local communities are fairly compensated** (see *CBD Programme of Work* activity 2.1.6). Payments for Environmental Services provide one model although other frameworks can also be investigated.

Recommendation relating to governments

1. **Integration:** Conservation is not a sector to be addressed in isolation – on the contrary conserving natural resources should be recognised as a long-term investment by governments for their people. This implies that protected areas need to be much better integrated. Rather than putting all expectations onto the protected area itself, governments could use wider planning approaches to **look at the whole landscape or seascape and consider how the protected area links to other management approaches** (see *CBD Programme of Work* activity 1.2.1 and 1.2.2).

2. **Governance**: One option for expanding the extent and improving the effectiveness of protected area networks without high social costs is by using a wider range of governance types (e.g. co-management, private reserves, Community Conserved Areas etc). **Governments can help this process by assuring that such approaches are covered in the legal framework for protected areas, removing any perverse incentives** that might hinder their uptake and by actively encouraging their sustainable use (see CBD *Programme of Work* activity 2.1.2).
3. **Measuring the benefits of protected areas**: The role of biodiversity, ecosystem services and other protected area benefits in a country's wealth and national plans needs to be made much more explicit, for example **by integrating the value of natural resources and protected areas into national accounts**; this can help to avoid either understating or exaggerating the value of a country's natural resources to poverty reduction (see CBD *Programme of Work* activity 3.1.2).
4. **Financial and other support**: Setting aside land for protection creates short-term costs for governments even if there are clear long-term gains. WWF supports the idea that protected areas should generate income to cover as much of their costs as possible, including a realistic contribution to raising the well-being of the poorest members of society. But not all protected areas can be self-financing and governments will need **to invest in a good protected area network for the long-term stability of their own country and the wider global environment** (see CBD *Programme of Work* activity 3.4.2).

Recommendations relating to donors

1. **Long-term commitment**: Issues of conservation and social development are enormously complex and seldom respond well to short-term interventions. We propose that **donor agencies should increasingly start to channel funds to projects/programmes that are long-term**, since both biodiversity conservation and poverty reduction take time to achieve.

Research suggests that well-funded and adequately managed protected area systems are relatively more likely to provide a good return in terms of benefits, which if distributed equitably could aid poverty reduction. However, at present most investment is not directed at the areas that most need the money. Of an estimated total of some UD\$6 billion spent each year on managing protected areas only 12 per cent is spent in less developed countries, where most biodiversity, and most poverty, occurs⁴⁴⁸.

2. **Measuring success**: With this in mind, projects need to look beyond just the immediate gains (although these remain important) and targets should also **include longer term measures of success**, which might include for example policy changes, sustainable financing or the development of appropriate legislative frameworks (see for example CBD *Programme of Work* activities 3.1.3, 3.1.5 and 3.1.7).
3. **Realistic aims**: Many projects have failed because they tried to do too much; those developing projects should not attempt to solve everything in one project but instead **agree focused targets coupled with proper monitoring systems** to ensure that these are being met.
4. **The danger of confusion**: Multiple objectives are not always appropriate; **in many places protected area aims will remain completely or almost completely focused on nature conservation** (biodiversity, geodiversity etc) for valid reasons – these places also need and deserve our support.

Appendix 1: Literature review

This literature review was prepared as a first step to researching this overall report. The review aims to identify recent (primarily 2000 onwards) documentation related to the theme of protected areas and poverty reduction. It is based mainly on documents available as PDF files, since a secondary product from this work is to build a 'library' of documents for WWF staff to complement the review.

Protected areas and poverty reduction constitute a very broad subject and many documents have been written that are of relevance – sometimes indirect – to this topic. Many documents in the review thus cover one specific dimension of poverty reduction such as for instance, community participation or economic valuation. Greater emphasis was placed on international literature from the large organisations and aid agencies, such as CI, TNC, IUCN, DFID, the World Bank, UNDP etc. (under the first section) rather than the numerous specific country case studies that exist. Literature from a small number of case studies has also been included.

The documents are categorised as follows:

1. General policy and overview documents – divided by organisation/agency
2. Issue-related material and case studies
 - 2.1. Ecotourism literature
 - 2.2. Community management of protected areas
 - 2.3. Economic instruments
 - 2.4. Site (or group of sites) specific case studies

It should be noted that a number of the documents selected for this review are not exclusively related to protected areas but may cover conservation more broadly. They were however, included because they were considered to carry relevance to and/or important lessons on the interface between protected areas and poverty.

The summary of texts vary and are longer where specific data appeared to be of direct relevance and use to the development of this report.

General Policy and Overview Documents

IIED	<p>1. Roe, D (ed.) (2004); <i>The Millennium Development Goals and Conservation: Managing Nature's Wealth for Society's Health</i>, IIED, London, UK.</p>
	<p>This book argues that an integrated approach to conservation and development is needed if the Millennium Development Goals (MDGs) are to be met.</p> <p>While there are close interlinkages between conservation and poverty, the conservation and development communities remain polarised. Part of the reason is that natural resources are generally still not included in national accounts, and therefore, cannot be quantified when it comes to reducing poverty. In addition, efforts at integrating the two, such as integrated conservation and development projects (ICDPs) have not always presented the anticipated results in terms of conservation. Also, many conservation organisations have viewed poverty as being outside their core business.</p> <p>The document argues that both the conservation and development communities must try to:</p> <ul style="list-style-type: none"> • enhance awareness amongst development agencies on the importance of conservation – particularly 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, tapping opportunities for income generation and enterprise development; • shift the focus of international conservation policy from one that appears centred primarily on rare and endangered species and the extension of protected areas, to 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. <p>The editor advocates taking an ecosystem approach to conservation planning and also promotes the need to better integrate the environmental concerns of poor and vulnerable groups into mainstream development processes at global, national, and local levels. In this respect, she expresses concern that the environment is actually treated as an independent goal in the MDGs rather than being integrated across all MDGs.</p> <p style="text-align: right;"><i>Analytical review with case studies</i></p>
IIED	<p>2. Roe, D and J Elliott (2005); <i>Poverty-Conservation Linkages: A Conceptual Framework</i>, IIED, London, UK.</p>
	<p>The goal of the Poverty-Conservation Learning Group is to facilitate learning on conservation-poverty linkages between and within different communities of interest. One problem the group has identified is a lack of consensus on the nature and extent of linkages between biodiversity conservation and poverty (and hence missed opportunities for identifying common causes and common solutions to the two issues). Another problem identified is a lack of understanding of how to address these linkages. The conceptual framework articulated here offers a way to understand poverty-conservation linkages.</p>

	<p>It aims to:</p> <ul style="list-style-type: none"> • identify the questions and hypotheses central to the debate; • clarify sources of differences and opinions between conservation and development practitioners; • identify possible answers to central questions in the debate; • identify gaps in knowledge and future research priorities; • inform the process of identifying priority policy and institutional responses. <p style="text-align: right;"><i>Framework</i></p>
IIED	<p>3. Roe, D (2003); The Millennium Development Goals and Natural Resources Management: Reconciling Sustainable Livelihoods and Resource Conservation or Fuelling a Divide? In: Satterthwaite D (ed); <i>The Millennium Development Goals and Local Processes: Hitting the Target or Missing the Point ?</i>, IIED, London, UK.</p>
	<p>The question posed by the author is “<i>do the MDGs provide an appropriate framework for reconciling the divide between the conservation and development communities?</i>” Natural resource management lies at the core of most of the MDGs. While in theory the dependence of poor people on natural resources should encourage conservation of resources, in practice poor access and tenure rights often encourage exploitation.</p> <p>She argues that the indicators chosen to measure MDG 7 focus on quantity (of forest cover and of protected area) at the expense of quality, management regime and benefit distribution (who benefits and who loses from the extra protected areas or forests?). While clearly resource conservation is critical, how that happens, what is conserved, and for whom, requires a complex set of trade offs. The author also argues for a shift towards approaches to protected area management that are inclusive such as community-conserved areas or co-managed protected areas. While traditional, state-run protected areas have the potential to contribute to the achievement of the MDGs, the author cautions that this will only be the case if certain conditions are fulfilled:</p> <ul style="list-style-type: none"> • their establishment must be based on the prior informed consent of indigenous peoples and local communities; • thorough impact assessments must be undertaken with the full participation of indigenous people and local communities to identify potential negative impacts and provision should be made for full and fair compensation or mitigation where appropriate; • marginalised groups – e.g. nomadic pastoralists, indigenous people – must be given recognition; • mechanisms for including local as well as global values must be introduced in determining conservation priorities; and • equitable sharing of rights, responsibilities, costs and benefits is required between all relevant actors – this implies mechanisms for enhancing North–South financial flows, balancing customary and formal norms and institutions, and recognising historic tenure rights. <p>The author concludes by taking each MDG in turn and seeing how best to integrate the environment within them rather than maintaining it as a separate goal (MDG 7) as is currently the case.</p> <p style="text-align: right;"><i>Analytical paper</i></p>

TNC	<p>4. Leisher, C and J Peter (2004); <i>Direct Benefits To Poor People From Biodiversity Conservation</i>, TNC, Virginia, USA.</p>
	<p>This study aims to show that while in some areas there is potential for biodiversity conservation to directly reduce local poverty, biodiversity conservation's contribution to poverty reduction should not be overstated.</p> <p>Conservation and poverty reduction are complementary only if they are specifically targeted at areas where the known preconditions for success exist. The study focuses primarily on forests and marine resources for which the poverty-biodiversity links have been studied in detail.</p> <p>Forests - Timber and non-timber forest products (NTFPs) are the main categories of products from forests. Timber exploitation, however, rarely serves as local poverty reduction strategy. On the other hand, managing forests using an independent timber certification organisation such as the Forest Stewardship Council (FSC) can be beneficial for both biodiversity and livelihoods. NTFPs have been generally considered to be pro-poor, but in a study of 61 cases of NTFP production and trade in Asia, Africa and Latin America it was found that in fact generally NTFPs have not reduced poverty. On the contrary, the study notes that <i>"there is solid empirical evidence of the positive link between rural poverty and NTFP dependence."</i> It would appear that this is because NTFP collection is often the employment of last resort for poor people. Where exploitation of NTFPs has been successful in reducing poverty, it was because of their high value-to-weight ratio, stable markets, steady household involvement in their production and a low level of product alteration.</p> <p>Agroforestry - Agroforestry projects provide timber, fuelwood, fruit and nuts and livestock fodder that are all important to poor people. Like other kinds of forestry, agroforestry requires a long-term commitment and market access; thus land tenure and established markets are preconditions for success.</p> <p>Fisheries - The FAO estimates that 23 million poor people are dependent on small-scale fishing. Small-scale fishers are suffering in many parts of the developing world due to over-fishing. As the poor are the least able to cope with a loss of fisheries, making fisheries more sustainable is important for both poverty reduction and biodiversity conservation. Marine protected areas (MPAs) represent one of the best tools for sustainable fisheries. They include zones in which all extractive activities are prohibited (no-take zones). Experience in over a dozen countries shows that MPAs with no-take zones provide net increases in fish catches after as little as two years.</p> <p>The study lists 11 biodiversity conservation activities that can provide poverty reduction benefits directly to local poor people:</p> <ol style="list-style-type: none"> 1. <i>Local access to and management of natural forests</i> - Giving local people control over natural forests is likely to lead to their sustainable use largely because of their longer time horizons. 2. <i>Targeted collection of non-timber forest products</i> – While reducing poverty by promoting biodiversity-friendly NTFP extraction is limited, it can work in specific situations if certain pre-conditions are met. A recent study of NTFPs notes that access to markets is essential. Other prerequisites include: producers having secure tenure rights; combining NTFP production with other rewarding economic activities to diversify risk; harvesting NTFPs from areas of abundance and having established markets for products.

	<p>3. <i>Agroforestry near protected areas</i> - Encouraging farmers to plant trees in their fields, particularly on agricultural land bordering a protected area, can be beneficial for biodiversity and can provide farmers with additional income from the trees.</p> <p>4. <i>Establishment of marine no-take zones</i> - Establishing no-take zones within marine protected areas can have strong poverty reduction benefits provided they are in areas where the poor have access to the sea.</p> <p>5. <i>Networks of marine protected areas</i> - Connecting the design and management practices of marine protected areas (MPAs) is a cost-effective way to help ensure sustainable fisheries in poor countries.</p> <p>6. <i>Participatory project design</i> – To ensure local support, a project design should respond to local needs and perceptions. It is particularly important to identify and harness traditional systems of ecosystem management in the project area.</p> <p>7. <i>Gender and ethnic sensitivity</i> - There is evidence that conservation projects can have negative impacts on women and ethnic minorities (e.g. greater workloads, poorer nutrition or less income). Indicators should be disaggregated by gender and ethnicity. A portion of benefits, such as training or micro-credit, should be set aside for women and ethnic minorities.</p> <p>8. <i>Dispute resolution mechanisms</i> - Local people, government representatives and project leaders should build a mutually-acceptable dispute resolution system into projects from their inception.</p> <p>9. <i>Effective monitoring and evaluation</i> - A strong monitoring and evaluation system with quantitative and qualitative impact indicators and baseline data is essential. Projects or programmes should use an adaptive or iterative management approach.</p> <p>10. <i>More use of renewable energy</i> - Renewable energy sources, such as solar, biogas, micro-hydropower and wind, can offer both biodiversity and pro-poor benefits. One of the most important pro-poor benefits of renewable energy is improved health.</p> <p>11. <i>Taking a wider view of poverty reduction</i> –The “one dollar a day” poverty indicator is increasingly seen as failing to capture key aspects of poverty. While income is important, direct poverty reduction can also come from increasing opportunities for education and health, improving security so people do not drop back into poverty due to a natural disaster or health crisis and empowering people in local decision-making. All of these factors will improve the well-being of the poor, which in many cases may be more important to local people than increasing their incomes above the arbitrary line of “one dollar a day”.</p> <p style="text-align: right;"><i>Analytical paper</i></p>
IUCN	<p>5. Task Force on Economic Benefits of Protected Areas of the World Commission on Protected Areas (WCPA) of IUCN, in collaboration with the Economics Service Unit of IUCN (1998); <i>Economic Values of Protected Areas: Guidelines for Protected Area Managers</i>, IUCN, Gland, Switzerland and Cambridge, UK.</p>
	<p>This document provides guidance for park managers to prepare business plans for parks and reserves so as to assess and capture potential benefits, and thus ensure the long-term financial sustainability of protected areas in their care. The Guidelines reveal that protected areas are</p>

	<p>often a significant source of revenue and can make an important contribution to local economies. For instance in Costa Rica, while about US\$12 million is spent annually to maintain the national parks, in 1991 foreign exchange generated by parks was more than US\$330 million from 500,000 overseas visitors. Park-generated tourism is in fact the country's second largest industry. In Italy, the popularity of the Abruzzo National Park has helped to regenerate the economy of a poor area that previously suffered from severe depopulation.</p> <p>These cases demonstrate that protected areas can provide significant benefits to both national and local economies. Rather than presenting an opportunity cost, they represent a real opportunity for local populations. Clearly however, proper management is necessary to make sure that such exploitation is sustainable. Given suitable management, the "product" could be sold over and over again without diminishing its value and revenues can be used to maintain the protected area.</p> <p style="text-align: right;"><i>Guidelines</i></p>
IUCN	<p>6. Borrini-Feyerabend, G (1996); <i>Collaborative Management Of Protected Areas: Tailoring The Approach To The Context, Issues in Social Policy</i>, IUCN, Gland, Switzerland and Cambridge, UK.</p>
	<p>This document covers the conditions under which collaborative management agreements are recommended, the basic principles, assumptions and consequences of such agreements and their potential benefits, costs and obstacles. It presents a broad definition of the approach and provides a number of examples of how it has been tailored to different contexts. It also highlights potential difficulties. A common cause of conflict for example, is if the management agency has full jurisdiction within the protected area and no say in what happens in its surroundings, while other stakeholders have no say within the protected area but control whatever happens around it.</p> <p>The term "collaborative management" (also referred to as co-management, participatory management, joint management, shared-management, multi-stakeholder management or round-table agreement) is used when some or all of the relevant stakeholders in a protected area are substantially involved in management activities.</p> <p>The author argues that collaborative management is not always a solution, particularly when rapid action and decisions are necessary to save an area. However, she also notes that when local communities' livelihoods depend on the resources of the protected area and/or when their active engagement and collaboration are essential to ensure effective protection, then collaborative management should be sought. It is particularly appropriate to pursue partnership agreements when one or more of the following conditions apply:</p> <ul style="list-style-type: none"> • the local stakeholders have historically enjoyed customary/legal rights over the territory; • local interests are strongly affected by the way in which the protected area is managed; • the decisions to be taken are complex and highly controversial (e.g. different values need to be harmonised or there is disagreement on the ownership status of the land or natural resources); • the agency's previous management has clearly failed to produce the expected results; • the various stakeholders are ready and eager to collaborate; • there is ample time to negotiate. <p>A collaborative management regime may thus present different characteristics not only from place to place but also, in a specific location, over time.</p>

	<p>The author describes the process for setting up collaborative agreements, emphasising throughout that they need to be tailored to individual situations. She concludes that collaborative management is not a panacea and, in fact, a number of costs and potential obstacles need to be evaluated before embarking on the process.</p> <p style="text-align: right;"><i>Guidelines</i></p>
IUCN	<p>7. Steele, P, G Oviedo and D McCauley (eds.) (2006); <i>Poverty, Health, and Ecosystems: Experience from Asia</i>, IUCN, Gland, Switzerland and Cambridge, UK and Asian Development Bank, Manila, Philippines.</p>
	<p>The analysis in this report takes a multidimensional view of poverty, encompassing lack of income, powerlessness and a limited asset base. It seeks to: (i) demonstrate the links between poverty, health and environmental resources; (ii) understand factors that can drive the loss of environmental resources; and (iii) identify ways to overcome the political, institutional and policy challenges when tackling poverty and the loss of environmental resources.</p> <p>The conceptual framework used to guide this analysis focuses on three elements: (i) people and households (particularly poor households); (ii) ecosystems; and (iii) institutions.</p> <p>Fisheries and other aquatic resources are a good example of how ecosystem services are important for the livelihoods and health of the poor as they provide a source of both employment and nutrition. In addition to benefiting directly the livelihoods and health of poor people, ecosystems also provide them with an asset base and act as an insurance policy.</p> <p>Because in most societies some groups have considerably more economic and political influence than others, they are the ones that set the rules in their favour. This creates a situation whereby ecosystem resources constitute an important source of income, capital and insurance for the poor, but the rich consume a larger share of these resources. Pro-poor growth based on natural resources is not impossible, but neither should it be taken for granted.</p> <p>Recent experience and analysis lead to the following main conclusions regarding poverty-environment relationships:</p> <ul style="list-style-type: none"> • the causal relationship between poverty and the environment is not simple and the link between pro-poor growth and natural resources is complex; • natural resources are important for the livelihoods of the poor; • the poor depend more on natural resources, though they exert less absolute pressure on these resources compared to the rich; • natural resources are particularly important to women; • population density and environmental management are linked, but many factors, such as technology and site-specificities, mediate this relationship; • health, rural poverty and natural resource links are well understood in some cases, such as indoor air pollution and pesticide risks, but new areas, such as zoonotic diseases, are only just beginning to receive attention; • the vulnerability of poor households to natural disasters is a key related issue and it will be exacerbated by the need for adaptation to global climate change. <p>Case studies in this paper demonstrate the concrete poverty-environment links in Asia and demonstrate the many challenges and the structural, and often political, nature of the problems which may explain why, in many cases, natural resources are being managed unsustainably across Asia.</p>

	<p>The report concludes that for too long, natural resource issues have been approached superficially in terms of awareness-raising, capacity-building, technical know-how or improved technology. These approaches often fail to address the underlying causes of environmental decline. It is essential to build on successes and to increase understanding of how environmental change is part of larger economic and political changes.</p> <p><i>Analytical paper with case studies</i></p>
IUCN	<p>8. Borrini-Feyerabend, G, A Kothari and G Oviedo (2004); <i>Indigenous and Local Communities and Protected Areas: Towards Equity and Enhanced Conservation</i>. IUCN, Gland, Switzerland and Cambridge, UK.</p>
	<p>This guidance document is intended to help protected areas staff, staff of development and conservation organisations, community leaders, local conservation committees and policy-makers and legislators to better integrate people and protected areas.</p> <p>Whereas traditionally protected area professionals focused on nature alone, today more and more recognise that natural resources, people and cultures are fundamentally inter-linked. Three key elements have helped shape this progression: i) the understanding that protected areas are integrated within a larger landscape, ii) the understanding that ecosystems are in constant flux, and iii) the realisation that people need to be part of the protected area process. The authors distinguish between exclusive and inclusive governance systems for protected areas where indigenous and local people are either marginalised or on the contrary central to the protected area. They define four governance types and set out detailed guidance for co-management of protected areas and for community-conserved areas using a number of examples. The four governance types are: 1) government managed protected areas; 2) co-managed protected areas; 3) private protected areas; and 4) community conserved areas. They then map each of these against the IUCN protected area categories. The authors suggest that in an effort to better manage protected areas, expand them and better link them, the conservation community should consider embracing these four governance types as well as a number of governance principles.</p> <p>The document concludes with four broad policy recommendations that, across regions, appear to encourage and strengthen the positive contribution of “indigenous peoples and local and mobile communities” to the conservation of biodiversity and to protected areas in particular, namely:</p> <ul style="list-style-type: none"> • strengthen the cultural identity of indigenous peoples and local and mobile communities, in particular regarding natural resource management and conservation; • secure the rights and responsibilities of indigenous peoples and local and mobile communities; • ensure legislative and policy backing to co-managed protected areas and community conserved areas; • support capacity for co-management and community conservation. <p><i>Guidelines with case studies</i></p>
IUCN	<p>9. Redford, K H and M Mockrin (2005); <i>The Role of Hunting in Promoting Protected Areas</i>. In: McNeely, Jeffrey A (Ed), <i>Friends for Life: New Partners in Support of Protected Areas</i>, IUCN, Gland, Switzerland and Cambridge, UK.</p>
	<p>The authors look at the controversial role that well-managed hunting can play in protecting biodiversity. While hunting is a recognised use of protected areas worldwide, its use as a tool to support protected area management will depend on the ecological, political, historical and</p>

	<p>social contexts and how these frame the relationship between hunting and protected area objectives. It is important to note upfront that areas where hunting takes place will not achieve the same biodiversity objectives as areas without hunting since hunting affects genetic, species and ecosystem components of biodiversity.</p> <p>Hunting in protected areas falls under three main categories: i) hunting for recreation, ii) hunting for subsistence, and iii) hunting to manage invasive or overabundant species. Hunting may also sometimes be a part of cultural practices. Hunters contribute to protected areas through a multitude of actions, including pest control, monitoring wildlife populations, political support for protected area management and funding.</p> <p>Sport hunting can generate substantial revenue, which can then be channelled back to national parks and local people. This revenue may be generated in a number of ways, including through direct payments to governments or through taxes levied by the government. In Africa, for example hunters must pay hunting licences and fees, trophy fees, conservation fees, observer fees and weapons import fees. Hunting outfitters must also pay a concession fee in order to have exclusive access to a hunting area. In total, it has been calculated that hunters from North America and Europe are willing to pay from US\$14,000 to US\$60,000 or more for a 10–21 day safari to hunt African trophy species. In addition, a hunting concession with elephants can boost annual government revenues by US\$340,000. In Namibia, trophy hunting makes up at least 14 per cent of the total tourism sector and is a significant component of the economy. Of this amount, an estimated 24 per cent accrues to poor segments of society in the form of wages and rentals/royalties. In Tanzania, for example, 80 per cent of protected areas allow hunting. The Selous Game Reserve alone, the largest protected area in Africa, comprising 4,300,000 ha, holds 35 per cent of Tanzania's hunting blocks. In Botswana, 24 per cent of the national territory, or 13,968,000 ha, is zoned as Wildlife Management Areas (WMAs). Some Man and the Biosphere (MAB) reserves may also, in some cases, allow subsistence hunting.</p> <p>The authors note that one final advantage of revenues generated from sport hunting is that they may be more reliably and evenly distributed than revenues generated from wildlife viewing. In Tanzania, for example hunting tourism is dispersed over a wider range of protected areas than wildlife viewing, which concentrates on a few well-known national parks. In Zambia the percentage of revenue from trophy hunting that goes back to communities has increased from 1 per cent in the 1980s to 67 per cent in 1994. The increased distribution of revenue to local communities can be beneficial to protected area management when used to pay for community game guards, as in the case of Zambia, and can contribute to a greater understanding of wildlife conservation in local communities. The authors conclude by listing 11 policies needed to maximise the contributions that hunters can make to protected areas and biodiversity conservation.</p> <p style="text-align: right;"><i>Analytical paper</i></p>
IUCN	<p>10. McShane, T O (2005); Protected Areas and Development Assistance Agencies: at the Intersection of Conservation and Development. In: McNeely, Jeffrey A (ed); <i>Friends for Life: New Partners in Support of Protected Areas</i>, IUCN, Gland, Switzerland and Cambridge, UK.</p>
	<p>The author asserts that there is no doubt that poverty reduction and conservation of biodiversity must work hand-in-hand. However, some trade offs must be recognised, and fundamental errors need to be avoided for integrated conservation and development to work. He describes some of the issues arising from traditional ICDPs. It is essential for instance:</p>

	<p>to integrate local people as active partners in the projects early on in the decision-making process, to adopt explicit testable assumptions, to clearly state objectives and measurable conservation targets.</p> <p>To be effective, future ICDPs will require a vertically integrated mix of site-based programmes, policy initiatives and campaign action. The appropriate positioning of integrated conservation and development relative to other complementary conservation activities operating on a variety of spatial and temporal scales will be one of the major challenges of the emerging landscape- or ecoregion-scale conservation approaches.</p> <p style="text-align: right;"><i>Analytical paper</i></p>
IUCN	<p>11. Scherl, L M (2005); Protected Areas and Local and Indigenous Communities. In: McNeely, Jeffrey A (ed), <i>Friends for Life: New Partners in Support of Protected Areas</i>, IUCN, Gland, Switzerland and Cambridge, UK.</p>
	<p>This paper (which is the summary of a workshop on the topic) focuses on the relationship, past and future, between indigenous communities and protected areas. Scherl highlights that while conservationists and others debate what role indigenous and local people should have in protected areas, they have traditionally and over thousands of years, played an important role. She notes that conflicts surrounding establishment and management of protected areas are more the norm than the exception. However, the existence of conflict implies that these areas contain values to a variety of groups. A number of issues such as unequal distribution of benefits and costs, governance systems and lack of compensation are of prime importance if one is to effectively address protected areas and poverty reduction.</p> <p>Three areas are particularly important to the relationship between protected areas and indigenous peoples:</p> <p>1. Sustainable development and poverty – Poverty is multi-dimensional incorporating assets, income, vulnerability, voice, empowerment and capacity. Where there are high levels of poverty, the linkages between management of protected areas and poverty reduction need to be addressed if protected areas are to be effective. Proper social impact assessments of protected areas need to be done.</p> <p>2. Rights and equitable sharing of benefits and costs – A particular emphasis on land tenure regimes is needed. Payments for environmental services are also important although Scherl notes that many important benefits may simply not have a financial value. It is not always clear how trade offs that benefit international, regional and national levels impact on local communities.</p> <p>3. Empowerment and governance – Empowerment means not only giving local and indigenous communities the opportunity to voice their interests during decision-making processes, but also engaging them as partners, creating incentives for them to conserve resources. It also means recognising the value of giving community members real rights and ownership of resources. Such empowerment should begin before a protected area is established. The empowerment of local and indigenous communities requires governance systems that are inclusive and flexible.</p> <p>The author highlights the concept of social justice as central to the approach taken to deal with protected areas and indigenous and local communities. She finishes the paper with a number of policy and action recommendations under each of the above three themes.</p> <p style="text-align: right;"><i>Analytical paper</i></p>

IUCN	<p>12. Scherl, L M, A Wilson, R Wild, J Blockhus, P Franks, J A McNeely and T O McShane (2004); <i>Can Protected Areas Contribute to Poverty Reduction? Opportunities and Limitations</i>, IUCN, Gland, Switzerland and Cambridge, UK.</p>
	<p>This publication seeks to improve understanding of the relationship between poverty and protected areas, in support of governments' national and international commitments on sustainable development. The authors argue that IUCN protected area categories V and VI are the most relevant to poverty reduction.</p> <p>IUCN states that pro-poor conservation is not just an ethical response but “<i>an opportunity to contribute to the growth of the environmental sphere of sustainable development by proving its fundamental importance to economic and social outcomes in some of the world's poorest but most biologically diverse regions.</i>” Poverty is increasingly recognised as being multi-faceted including: lack of assets and income, lack of opportunities, lack of voice and empowerment, vulnerability and lack of capacity. The paper argues that stewardship of natural resources, upon which so many rural communities depend, is vital to strengthen the resilience of the poor. Yet biodiversity conservation in general, and protected areas in particular, are still not fully integrated into sustainable development planning.</p> <p>Protected areas provide a wide range of goods and services to people living in and around them, but also to the global community. The Millennium Ecosystem Assessment (MEA) divides these services into four categories: <i>provisioning services</i> (services that yield natural products such as food, fresh water, fuel wood and herbal medicines that have direct use value to rural communities), <i>regulating services</i> (e.g. climate regulation, watershed protection, coastal protection, water purification, carbon sequestration and pollination), <i>cultural services</i> (e.g. religious values, tourism, education and cultural heritage) and <i>supporting services</i> (e.g. soil formation, nutrient cycling and primary production).</p> <p>Historically, protected area creation has often involved displacing already vulnerable people, as well as depriving them of access to resources such as land, timber and wildlife. Estimates at a national level have shown that states can incur considerable opportunity costs from the loss of agricultural land to protected areas. However, to date the costs to people at a local level remain poorly researched. ICDPs inclusive management approaches (where partnerships are established with local communities to manage protected areas) and community conservation areas (areas voluntarily conserved by local communities through different arrangements) are all recent attempts to ensure that local people derive greater benefits from protected areas. While there was much enthusiasm around ICDPs in the early 1990s, many have failed to limit unsustainable resource use or change attitudes and on the whole they have not led to demonstrable improvements in people's livelihoods. Currently, a new generation of ICDPs is incorporating innovative approaches such as: building coalitions with all key stakeholders, starting to apply ICDP elements to the management of broader landscapes and supporting carefully selected, small-scale pilot income-generating activities that have genuine local support, real prospects of sustainability and clear benefits for biodiversity conservation.</p> <p>Site, national and international level actions are suggested to enable protected areas to play a greater role in sustainable development. These include supporting innovative approaches, capacity building among local communities, putting in place legal frameworks that recognise indigenous communities' right to land, integrating protected areas into wider landscape planning and developing innovative financial mechanisms to support protected areas.</p>

	<p>Protected areas by themselves will not generate the broad development benefits required to reduce poverty nor should we expect them to do so. Protected areas inevitably favour some individuals or groups of people more than others and the rural poor have tended to be those with the most to lose. What is important to note however, is that the contribution of protected areas to poverty reduction is no different to that of other resource-management approaches designed by central governments, including timber concessions, mining, dam construction and infrastructure development.</p> <p style="text-align: right;"><i>Analytical paper</i></p>
IUCN	<p>13. Fisher, R J, S Maginnis, W J Jackson, E Barrow and S Jeanrenaud (2005); <i>Poverty and Conservation: Landscapes, People and Power</i>, IUCN, Gland, Switzerland and Cambridge, UK.</p>
	<p>This book argues that attempts to reconcile development and conservation needs have generally failed not because they are irreconcilable but because integration has been limited both institutionally and geographically. It discusses strategies for linking conservation and poverty reduction, including:</p> <ul style="list-style-type: none"> • focusing on removing constraints (particularly institutional) and building opportunities; • identifying causes of environmental degradation and poverty beyond the site level and addressing problems at the appropriate geographical and institutional levels; • using landscape-level solutions as well as and, in many cases instead of, site-based solutions, (i.e. seeking ways to meet objectives in different parts of the wider landscape rather than trying to address them all in a single site, such as a protected area). <p>The authors highlight the fact that while conservation practices have in many cases had negative impacts on poor people, it is not conservation per se that has caused these impacts, but rather the often misguided approach taken to conservation. They use DFID's Sustainable Livelihoods Framework and conclude that a wider understanding of poverty provides conservation with opportunities to make a positive impact on poor people's livelihoods.</p> <p style="text-align: right;"><i>Analytical review with case studies</i></p>
IUCN	<p>14. IUCN Commission on Environmental, Economic and Social Policy (2003); <i>Policy Matters: Community Empowerment for Conservation</i>, Issue 12, IUCN, Gland, Switzerland and Cambridge, UK.</p>
	<p>This issue of CEESP's journal <i>Policy Matters</i> which was developed for the 2003 World Parks' Congress in Durban contains a number of short papers related to community participation in protected areas. Section 1 deals with the complexities inherent in governing protected areas. It emphasises the need to understand and deal with poverty alongside conservation concerns. Section 2 explores current debates, often with a regional or sub-regional perspective. Section 3 provides individual examples of community-conserved areas and co-managed protected areas, including areas conserved for livelihood, political, cultural, spiritual or purely economic reasons.</p> <p style="text-align: right;"><i>Journal</i></p>
CI	<p>15. CI (2006); <i>Global Symposium: Defying Nature's End: The African Context</i>, Antananarivo, Madagascar.</p>
	<p>In June 2006 Conservation International (CI) held a meeting in Antananarivo to look at poverty and conservation linkages in Africa. The declaration resulting from the summit highlights notably the fact that the MDGs can only be achieved if there is a radical change in</p>

	<p>the way that the environment is addressed in national development plans. This is a particularly acute problem in Africa where biodiversity contributes significantly to livelihood strategies and where environmental degradation exacerbates poverty. The declaration also warns that healthy ecosystems are essential to help poor people deal with the likely impacts that climate change will have on Africa.</p> <p style="text-align: right;"><i>Declaration</i></p>
CBD	<p>16. McNeely, J A (2004); Protected Areas, Poverty, and Sustainable Development. In: CBD; Biodiversity Issues for Consideration in the Planning, Establishment and Management of Protected Area Sites and Networks, CBD Technical Series No. 15, Montreal, Canada</p>
	<p>This paper highlights some of the most relevant issues on the linkage between protected areas and poverty. The author identifies ten functions that protected areas deliver including watershed protection, storm protection, tourism, forest products and recreation. In the context of poverty, he looks at the real and potential contributions that these functions can make to the lives of poor people. He adds that some of these functions can also be provided outside protected areas but properly selected and managed protected areas typically will deliver more of these functions per unit area at lower cost than will most other kinds of land use.</p> <p>He suggests that management of protected areas for sustainable development should be based on four main principles: 1) protected areas deliver different benefits at different scales; 2) many stakeholders have interests in protected areas and important roles to play in their management; 3) the major problems facing protected areas need to be addressed by institutions at the appropriate scale; 4) protected areas are best conceived as parts of a national land use system. With respect to principle 3, the author argues that while in most instances protected areas are managed by a central government agency, in many instances local communities may have a better understanding of specific interactions within the protected area than a centralised body.</p> <p>He concludes that more needs to be done to build support from local communities for protected areas. To do this will require incentives and disincentives, economic benefits and law enforcement, education and awareness, better employment opportunities for rural communities both in the protected area and outside, enhanced land tenure and control of new immigration. Protected areas can become engines for sustainable development if the right balance between competing demands can be reached. A number of conditions can help achieve this: recognising the many economic, social, cultural, ecological, developmental and political values of protected areas; ensuring appropriate management institutions in collaboration with stakeholders; allowing the flow of sustainable economic benefits and information from both traditional knowledge and mobilising modern science to enable protected areas to adapt to changing conditions.</p> <p style="text-align: right;"><i>Analytical paper</i></p>
CBD	<p>17. Marrie, H (2004); Protected Areas and Indigenous and Local Communities. In: CBD; Biodiversity Issues for Consideration in the Planning, Establishment and Management of Protected Area Sites and Networks, CBD Technical Series No. 15, Montreal, Canada.</p>
	<p>The author explores the overlap between protected areas and indigenous and local communities.</p>

	<p>It is estimated that up to 50 per cent of protected areas have been established on ancestral lands of indigenous communities. One review concluded that 86 per cent of protected areas in Latin America, 69 per cent in India and 70 per cent worldwide are inhabited, and the great majority of these inhabitants are indigenous or traditional peoples practising subsistence economies. It appears from a review of 82 protected areas that protected areas categorised as IUCN Category II most frequently overlap with lands traditionally occupied or used by local communities.</p> <p>The author draws a parallel between the current system of protected areas and the traditional one. She notes that the groves, mountains, rivers and lakes held sacred by indigenous and local communities, were often particularly important for biological, ecological, landscape or vulnerability reasons. In other words, the same criteria were often applied for the identification of traditional “protected areas” as those currently applied by governments. Also, in the same way that now there are park authorities, traditional areas were frequently under the authority of traditional institutions or spiritual leaders. She advocates more active participation of indigenous people in protected area selection and management, noting that in many instances indigenous people actively desire to establish protected areas in order to protect their own lands from exploitation. Special attention should be paid to ensure that both financial and human needs are met, for example, through an appropriate share of park revenues.</p> <p>In order to better engage local communities in financially beneficial activities, new forms of culturally-appropriate employment that build on traditional skills may need to be introduced to replace unsustainable practices. Protected area status can offer new employment opportunities such as park rangers or tourist guides, jobs in interpretive centres, tourist-oriented artefact production or infrastructure provision and maintenance. Such jobs will require new skills and training, therefore, financial assistance from developed countries could focus on this capacity- building of local communities.</p> <p style="text-align: right;"><i>Analytical paper</i></p>
DFID	18. DFID (1999); <i>Sustainable Livelihoods Guidance Sheets</i>. DFID, UK.
	<p>The framework proposed by DFID places people at the centre of development. It is intended to be a versatile tool for use in planning and management. The framework was developed to help DFID better address poverty concerns in its work. It is based on the fact that shocks, trends and seasonality may all cause sudden shifts in poor people’s livelihoods.</p> <p>Some of the key elements and definitions of the framework are:</p> <ul style="list-style-type: none"> • <i>Livelihoods Outcomes</i> which include: more income, increased well-being, reduced vulnerability, improved food security and more sustainable use of the natural resource base. Livelihoods are shaped by many different forces and factors that are themselves constantly shifting. • The <i>Vulnerability Context</i> frames the external environment in which people exist, and on which they have limited or no control. It recognises that people’s livelihoods and the wider availability of assets are affected by critical trends as well as by shocks and seasonality. People require a range of assets to achieve positive livelihood outcomes: no single category of assets on its own is sufficient to yield all the many and varied livelihood outcomes sought by people. • The <i>Asset Pentagon</i> which contains: human capital, social capital, physical capital, natural capital and financial capital, lies at the core of the livelihoods framework. These assets are identified as the essential elements that contribute to livelihoods. Structures in

	<p>the framework can be seen as the hardware – the organisations, both private and public – that set and implement policy and legislation, deliver services, purchase, trade and perform all other functions that affect livelihoods. Processes can be thought of as the software which determines the way in which structures and individuals operate and interact.</p> <p>The Sustainable Livelihoods approach seeks to develop an understanding of the factors that lie behind people’s livelihood choices and then to reinforce the positive aspects and mitigate the constraints or negative influences. The outcomes that can be measured through this approach are more income, increased well-being, reduced vulnerability, improved food security and more sustainable use of natural resources.</p> <p style="text-align: right;"><i>Framework</i></p>
DFID	<p>19. DFID (2002); <i>Wildlife and Poverty Study</i>, DFID, UK.</p> <p>In the context of DFID’s declining investment in wildlife, the report seeks to demonstrate the importance of wildlife to poor people.</p> <p>The document uses the Sustainable Livelihoods Approach to determine the contributions that wildlife can make to poverty reduction. Wildlife contributes to people’s livelihoods notably through bushmeat and income from ecotourism. On the other hand human-wildlife conflict can be a major cause of hardship on local communities. Evidence from case studies suggests that Community Based Wildlife Management (CBWM) can make local contributions to poverty reductions. However, until wider governance and policy issues are addressed they will fail to achieve broader rural development impacts.</p> <p>The report notes that protected areas are important but that their costs should be borne internationally rather than locally. It concludes that wildlife has a role to play in poverty reduction by promoting pro-poor tourism, providing food and reducing vulnerability and improving governance.</p> <p style="text-align: right;"><i>Analytical review</i></p>
EU	<p>20. Billé, R (2006); <i>Biodiversity in European Development Cooperation, Supporting the Sustainable Development of Partner Countries</i>. IUCN, Gland, Switzerland and Cambridge, UK.</p> <p>The paper looks at EU investments in development cooperation to identify the role that biodiversity conservation can play in poverty reduction.</p> <p>After analysing the links between biodiversity and poverty / poverty reduction, the paper looks at the EU’s commitments under international conventions and agreements, from the WSSD, MDGs to Ramsar, CBD etc. The overarching objective of EU development cooperation is the eradication of poverty in the context of sustainable development, building on a set of common principles such as ownership, partnership and in-depth political dialogue, promoting policy coherence for development, participation of civil society, gender equality and the need to address state fragility. The European Community Development Policy defines how to implement this vision and identifies nine areas to be covered by European Union overseas development aid, including ‘<i>environment and sustainable management of natural resources</i>’. Environmental sustainability is also one of the seven cross-cutting issues to be mainstreamed.</p>

	<p>Until now, EU development cooperation has been structured around geographical programmes, providing funding for implementation of country and regional programmes (defined in Country and Regional Strategy Papers (CSPs/RSPs)), and thematic instruments. In addition a number of thematic programmes complement geographic ones, such as Council Regulations EC No. 2493/2000 on ‘measures to promote the full integration of the environmental dimension in the development process of developing countries’.</p> <p>Projects with biodiversity as a primary objective have historically concentrated to a large extent on terrestrial protected areas and tropical rainforests. Over the last decade, the focus has extended to marine protected areas and, more significantly, has shifted to approaches focusing on the sustainable use of biodiversity: access and benefits sharing, biodiversity–poverty linkages, indigenous peoples’ empowerment, forest certification, payment for ecosystem services, agro-biodiversity and domesticated animal species.</p> <p>The author notes the importance of institutional reforms, public participation, equity, and benefit-sharing, corporate social responsibility and more transparent monitoring and evaluation, as key to improving the impact of EU investment in the environment sector.</p> <p>The report’s last chapter highlights that despite many successes, the EU is still far from achieving its stated environmental objectives in overseas aid. It makes the following recommendations concerning EU aid:</p> <ul style="list-style-type: none"> • intensify and scale-up initiatives with biodiversity as a primary or secondary objective; • overcome the EU policy/country-driven dilemma; • improve mainstreaming of biodiversity both in partner countries and within the EU; • improve coherence with non-development policies; • pay more attention to EU Overseas Countries and Territories; • develop tools for reporting on and monitoring biodiversity in European development cooperation. <p style="text-align: right;"><i>Analytical review</i></p>
EU	<p>21. Biodiversity in Development Project (2001); <i>Biodiversity in Development: Strategic Approach for Integrating Biodiversity in Development Cooperation</i>, European Commission, Brussels, Belgium/IUCN, Gland, Switzerland and Cambridge, UK.</p>
	<p>The proposed “strategic approach” in this document aims to identify the challenges for EU development aid to achieve the twin goals of poverty reduction and biodiversity conservation.</p> <p>The document describes the different goods and services that ecosystems provide then identifies threats and their underlying causes. It looks at livelihood and biodiversity change scenarios, identifying in detail both the positive and negative impacts biodiversity can have on poor people. It suggests that the two main challenges for development cooperation are to ensure that: 1) biodiversity should continue to provide goods and services needed for human development; and 2) costs and benefits from biodiversity should be equitably shared.</p> <p style="text-align: right;"><i>Analytical review</i></p>
UNDP	<p>22. UNDP, UNEP, IIED, IUCN and WRI (2005); <i>Assessing Environment’s Contribution to Poverty Reduction</i>, UNDP, New York, USA.</p>
	<p>This study looks at how to ensure that the environment can contribute to the MDGs. Its fundamental argument is that we cannot meet these goals unless we expand investment in the environment, including conservation, and build capacity and empower local communities.</p>

	<p>The study reviews the indicators used in the global MDG framework that measure progress toward reversing the loss of environmental resources. Improvements are recommended in defining the indicators, paying greater attention to the development of national-level indicators and improving associated data. It criticises current indicators as not capturing real progress (which is different to saying that there is no progress in mainstreaming the environment). Rather, the report suggests that useful country-level indicators should be selected from country-led groups that would set targets, identify indicators, monitor change, and assess and report on progress over time. The paper also makes some suggestions to help countries interpret MDG 7, Target 9 (<i>“Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources”</i>) and to develop strategies to measure progress toward achieving environmental sustainability and reversing the loss of environmental resources.</p> <p>Recommendations for action include:</p> <ol style="list-style-type: none"> 1. Interpreting MDG 7, target 9. Since target 9 is neither time-bound nor quantifiable, this paper suggests splitting it into two separate targets: the first dealing with environmental resources in a more comprehensive fashion, with wording as follows, <i>“maintain or restore the capacity of ecosystems to provide ecosystem services to people.”</i> The second target would be, to <i>“integrate the principles of sustainable development into country policies and programmes,”</i> and should also apply to all countries. 2. Setting country priorities for target 9. The international community should support developing country processes for setting targets and developing indicators that meet their specific needs. It is recommended that countries adopt an ecosystem approach to ensure that sufficient attention is paid to the provisioning, regulating and cultural services of target resources which, in many cases, can create opportunities for poverty reduction. 3. Strengthening and integrating environmental assessment processes. It is essential to mainstream the environment and ecosystems in the development strategies of all MDGs (rather than considering it only in MDG 7), particularly those that address health, water and sanitation, poverty, gender and governance targets. 4. Strengthening the information base to develop indicators for planning, decision-making and assessment. For environmental resources and ecosystems to be recognised as worthy of investment by business leaders, bankers and finance ministers, much more attention needs to be paid to producing the right data for decision-making. 5. Involving developed countries in setting targets, developing indicators and reporting progress. The developed world should first examine its own development trajectory to see if it is sustainable and then share its experiences and lessons learnt. <p style="text-align: right;"><i>Analytical paper</i></p>
UNDP	<p>23. UNDP and EC, (2005); <i>Attacking Poverty While Improving the Environment: Towards Win-Win Policy Options, Poverty & Environment Initiative</i>, UNDP and EC, New York and Brussels.</p>
	<p>This document summarises a more detailed paper from 1999. It highlights the fact that previously held views of simple causal links between poverty and the environment are incorrect. It emphasises that building effective community institutions that promote participation in resource management are essential in poverty reduction. “Win-win” solutions can exist but will require appropriate policies to frame them.</p>

	<p>Key recommendations are: 1) Protecting poor people's natural assets, i.e.: through proper governance systems; 2) Expanding poor people's resource base; 3) Co-managing resources with the poor; 4) Co-investing with the poor; 5) Supporting infrastructure development for the poor; 6) Developing technologies that benefit the poor; 7) Employing the poor; 8) Compensating the poor; 9) Intervening to overcome market deficiencies; 10) Eliminating subsidies for the non-poor; 11) Reforming planning procedures.</p> <p style="text-align: right;"><i>Analytical paper</i></p>
WORLD BANK	<p>24. Bojo J and R C Reddy (2002); <i>Poverty Reduction Strategies and Environment. A Review of 40 Interim and Full Poverty Reduction Strategy Papers</i>, World Bank. Washington DC, USA.</p>
	<p>This review looks at 32 interim and eight full Poverty Reduction Strategy Papers (PRSPs) in Latin America, Africa, the Middle East, East and Central Asia and Eastern Europe and addresses four major questions: 1) what environmental concerns and opportunities are identified in the PRSPs?; 2) to what extent are poverty-environment causal links analysed?; 3) to what extent are environmentally relevant policy responses, costed actions, targets and indicators put in place as part of the poverty reduction efforts?; 4) to what extent has the process allowed for mainstreaming the environment? The review uses a scoring system to assess progress in individual countries.</p> <p>Main findings are:</p> <ul style="list-style-type: none"> • There is considerable variation in the degree of mainstreaming, with Mozambique topping the list and Sao Tomé Principe at the bottom. Mozambique, Honduras, Nicaragua, Bolivia and Kenya all had relatively high standards while the lowest scores went to Guinea-Bissau, Senegal and Central African Republic; • Overall a large number of PRSPs are weak on environmental issues; • There is a positive evolution in terms of mainstreaming between interim and full PRSPs; • Examples of good practice do exist and include: Kenya's collaborative agreements with communities at a cost of US\$10 million and Cameroon's proposed "equalization fund" to transfer income from forest development to municipalities. <p style="text-align: right;"><i>Analytical review</i></p>
WORLD BANK	<p>25. Grimble, R and M Laidlaw (2002); <i>Biological Resource Management: Integrating Biodiversity Concerns in Rural Development Projects and Programs</i>, Environment Department Papers, Paper No. 85, World Bank, Washington DC, USA.</p>
	<p>The paper examines how to better accommodate natural resource issues into rural development projects where poverty reduction is the primary consideration. The authors take an anthropocentric approach rather than an ecocentric one and identify the following challenges: to ensure that change and development occur without unnecessary loss of biodiversity, establishing productive systems and ensuring that the social groups most dependent on biological resources do not suffer.</p> <p>The authors propose a three-step planning framework to help development agencies better integrate communities in large rural development projects:</p> <ol style="list-style-type: none"> 1. Analyse the system – i.e. understanding the environment and people's interactions with it. 2. Develop a vision and rationale for action – i.e. based on data gathered above, considering the options and determining the best one. 3. Implement and feedback – i.e. implementing activities in an iterative manner.

	<p>The paper concludes that: a) all development and conservation projects are location-specific and that one can only make limited generalisations, b) while macro issues are important, micro-economic incentives and the distribution of costs and benefits should not be overlooked.</p> <p style="text-align: right;"><i>Analytical paper</i></p>
WORLD BANK	<p>26. Chomitz, K P, with P Buys, G De Luca, T S Thomas and S Wertz-Kanounnikoff (2007); <i>At Loggerheads? Agricultural Expansion, Poverty Reduction and Environment in the Tropical Forests</i>, World Bank, Washington, DC, USA.</p>
	<p>This report seeks to identify the sorts of policy responses that might help mitigate the negative impacts that people can have on forests (with a focus on tropical forests and savanna woodlands). Its lessons can be applied to the many forested protected areas and landscapes.</p> <p>There are links between poverty and forest degradation, and fully understanding these helps to frame responses to both problems. Nonetheless, the conditions governing poverty and forestry are very distinct in different regions and the author shies away from any generalisations. He notes that forest loss can be driven by both poverty and wealth and therefore that attempts to make a directional link (ie: whether forest degradation causes poverty or poverty causes degradation) are not helpful.</p> <p>To better frame the analysis the author identifies three types of forestlands:</p> <ol style="list-style-type: none"> 1. Forest-agriculture mosaiclands – these are settled areas where agriculture is interspersed with forest and population density is high. In these areas the potential for both poverty reduction and environmental conservation is great, as is the potential for trade offs. 2. Frontier and disputed areas – these are conflictual areas where agriculture is expanding into forest areas. In these areas the challenge is to reduce or mitigate environmental pressures while promoting rural development. 3. Areas beyond the agricultural frontier – these are still shielded from agriculture, but home to some of world's poorest people. Here the author identifies the need to provide services for poor people. <p>For each forest type, the author identifies the main conservation and poverty challenges. Environmental externalities and property rights are essential issues that need to be addressed. In conclusion, the author identifies carbon storage and biodiversity as the two global forest services that could help reduce forest loss.</p> <p style="text-align: right;"><i>Analytical paper</i></p>
GEF	<p>27. GEF Evaluation Office (2006); <i>The Role of Local Benefits in Global Environmental Programs</i>, GEF, Washington, DC, USA.</p>
	<p>This study assesses the local benefits generated by 132 GEF funded projects which were analysed together with 113 supplementary evaluations and 30 interviews. It should be noted that GEF funding is focused on global benefits, but the projects contained a local benefit component as one way of achieving the stated global benefit objectives. The projects assessed cover biodiversity, climate change and international waters.</p> <p>The main conclusions emerging from this study are:</p> <ol style="list-style-type: none"> 1. in many areas local and global benefits are linked in biodiversity projects; 2. there was good progress in terms of developing local incentives to achieve global benefits;

	<p>3. nonetheless, both global and local benefits were often less than anticipated;</p> <p>4. few projects were able to report successful “win-win” outcomes for global and local benefits.</p> <p style="text-align: right;"><i>Analytical review</i></p>
WRI	<p>28. World Resources Institute (WRI) in collaboration with United Nations Development Programme, United Nations Environment Programme, and World Bank (2005); <i>World Resources 2005: The Wealth of the Poor—Managing Ecosystems to Fight Poverty</i>, WRI, Washington, DC, USA.</p>
	<p>This report looks at ecosystems and livelihoods, the importance of governance and steps to obtaining what it calls “environmental income”. It also contains a number of case studies. The central argument of the report is that income from ecosystems is a major way out of poverty. However, it also notes that unless the right governance structures are in place, the poor cannot reap these benefits.</p> <p>The environment is a direct source of income to the poor but it is also a source of vulnerability. Many of the obstacles stopping the poor from turning nature into a source of wealth can be traced back to local and national governance issues but also to global factors such as trade liberalisation.</p> <p>Environmental income is one of the components of rural livelihoods as defined in this report which suggests that a poor family’s total income is generally derived from at least four different sources:</p> <ul style="list-style-type: none"> • environmental income (including small-scale agriculture); • income from wage labour (such as agricultural labour) and home businesses; • remittances (money or goods sent from relatives outside the community); • other transfer payments, such as assistance from state agencies. <p>Much of the environmental income earned in the developing world comes from common pool resources (CPRs) such as forests, fisheries, reefs, waterways, pastures, agricultural lands and mineral resources that no individual has exclusive rights to. They are typically owned and administered by the state, a village, a tribe or other social grouping, with the idea that the benefits will accrue to many people rather than to one person or family. Local and distant residents go there to collect fire wood, graze their cattle, gather non-timber forest products like medicinal herbs or mushrooms, hunt, fish, collect water, or make use of a variety of other services such as visiting sacred groves. Because these “commons” or “public domain” lands are such a rich source of environmental income, they are a crucial element in the livelihood strategies of the poor, particularly those who do not own land.</p> <p>The report looks at the contribution different ecosystems (reefs, forests etc.) make to livelihoods. It then explores governance issues with respect to natural wealth. It recommends four steps to ensure that greater income from the environment accrues to the worlds poorest.</p> <p>These steps are :</p> <ol style="list-style-type: none"> 1. Better ecosystem management to ensure higher productivity – using an ecosystem approach. 2. Getting the governance structure right to ensure the benefits reach the poor – including community-based natural resource management (CBNRM) and co-management. 3. Commercialising ecosystem goods and services to turn resources into income, i.e. partnering with the private sector to gain support for marketing and perhaps certification.

	<p>4. Tapping new sources of environmental income, such as payments for environmental services.</p> <p>Five case studies are then presented, showing both the successes in poverty reduction but also the limitations of the approaches. The case studies are: conservancies in Namibia, a watershed project in Marashatra district in India, restoration of woodlots in Tanzania's Shinyanga region, empowering locals in 15 regions in Indonesia to fight illegal logging and recovering Fiji's coastal fisheries.</p> <p>The report finishes by looking at the MDGs and suggesting improvements to them, their targets and indicators. It also looks at PRSPs, notably highlighting their failure to mainstream the environment, and suggests ways to improve them.</p> <p style="text-align: right;"><i>Analytical review with case studies</i></p>
WWF	<p>29. Reed, D (2006); <i>The 3xM Approach: Bringing Change Across Micro, Meso and Macro Levels. Promoting Poverty Reduction and Environmental Sustainability</i>, WWF Macro Economics Programme Office, WWF US, Washington DC, USA.</p>
	<p>The 3xM Approach is designed to help practitioners at the community level understand how existing government policies and institutions can block or strengthen their efforts to reduce poverty and improve natural resource management. It is an approach that places the economic and environmental needs of the rural poor at the centre of development strategies.</p> <p>This approach links changes that are needed at the local level (micro) with higher-level changes, at the sub-national (meso) and national/international (macro) levels in a way that ensures supportive policies and institutional arrangements for environmental protection and poverty reduction.</p> <p>It is based on experiences in five countries (China, Indonesia, El Salvador, Zambia and South Africa) carried out over four-years. Its central argument is that as long as the poor are unable to access markets, technology, information and capacity, they will not be able to compete effectively in a globalised world. Thus, they will be forced to over-use their natural resources.</p> <p>The overarching purpose of the approach proposed is to remove political, economic and institutional obstacles so that the rural poor can become more competitive and ultimately, management of natural resources and ecosystems can be optimised.</p> <p>The important lessons learnt in the case studies are: a) that economic growth is a prerequisite for improved natural resource management and b) the need for a long-term horizon.</p> <p style="text-align: right;"><i>Framework</i></p>
WWF	<p>30. O'Gorman, T L (2006); <i>Species and Poverty: Linked Futures</i>, WWF International, Gland, Switzerland.</p>
	<p>The document argues that species conservation, an objective generally achieved via protected areas, can help improve people's livelihoods. It demonstrates, via six case studies, how species conservation can contribute to poverty reduction and to the MDGs. It uses DFID's Livelihoods Framework as its analytical framework.</p> <p>Analysis of the six case studies shows that:</p> <ul style="list-style-type: none"> • Sustainable resource management through local communities is succeeding in reducing species loss and environmental degradation.

	<ul style="list-style-type: none"> Species conservation programmes can and do deliver positive impacts on local livelihoods including improvements in human, social, financial, physical and natural assets and increased diversification of rural livelihood strategies. Species conservation efforts are ensuring access and ownership rights to natural resources, addressing local people's priorities and engaging the private sector to invest in sustainable enterprises and the rural economy. Species conservation projects/programmes can be successful in working through participatory processes to build on the principles of empowerment and governance. Well-planned species conservation programmes/projects clearly demonstrate that species' conservation work is ensuring sustainable development objectives, improving rural livelihoods and delivering on the MDGs. <p>The report concludes with a number of recommendations including: the importance of building partnerships between conservation and development organisations, and of building on and expanding existing, successful experiences that link poverty and conservation.</p> <p style="text-align: right;"><i>Analytical review with case studies</i></p>
WCS	<p>31. Agrawal, A and K Redford (2006); <i>Poverty, Development and Biodiversity Conservation: Shooting in the Dark</i>, Wildlife Conservation Society, New York, USA.</p>
	<p>This paper argues that both biodiversity and poverty are complex, multi-faceted issues and that attempts to merge the two have tended to minimise each one's importance. They examined 37 studies and concluded that out of these, the majority (34 studies) share two common analytical features: a focus on processes and outcomes in a single case- and single time period and an over-simplification of the complex concepts of poverty and biodiversity. They found that over 65 per cent of the studies either do not examine the causal relationships between poverty and biodiversity or focus only on either poverty or biodiversity.</p> <p>When looking at the different dimensions of poverty such as vulnerability and life expectancy, the authors note that there is no easy way of measuring all of these dimensions and that it is also difficult to give them equal weighting (e.g: is one extra year of life worth more or less than two extra years of formal education?)</p> <p>In their analysis the authors look at three interventions that aim to achieve poverty reduction and biodiversity conservation: community-based wildlife management, extractive reserves, ecotourism and sustainable livelihoods.</p> <ul style="list-style-type: none"> <u>Community-based wildlife management</u>: The essence of community-based wildlife management projects is to share part of the conservation benefits with local communities in exchange for their support of the projects. While numerous community-based wildlife management initiatives have been set up since the late 1980s, many are now being criticised as having produced results far below expectations. <u>Extractive reserves</u>: In the early 1990s there was much enthusiasm for extractive reserves as a possible way to combine biodiversity conservation and poverty reduction. These have now also been criticised and it is noted that one difficulty in assessing the biodiversity conservation impact of extractive reserves is the generally short period of studies which may overlook longer term impacts on ecosystems. <u>Ecotourism</u>: The authors highlight that in the literature on ecotourism there is an assumption that ecotourism inevitably supports poverty reduction and biodiversity. However studies do not include adequate baseline data, so it is difficult to know the extent of changes in poverty or biodiversity that can be attributed to a specific ecotourism project. Studies on ecotourism tend to focus more on the ecotourism

	<p>programme, and less on its context. Yet, many features of the context such as population density, rarity and accessibility of wildlife, distance from markets, trade possibilities, etc, may significantly influence the impacts that particular interventions have across different contexts.</p> <p>The authors indicate that in most instances, policies and programmes may alleviate some aspects of poverty but not all and they may also improve some elements of biodiversity, but not all. A more detailed understanding and analysis of such trade offs is sorely lacking. The authors suggest that until analysts and policy makers begin to think much more precisely about exactly which aspects of biodiversity and poverty are addressed by different approaches there will be little or no progress in understanding the links between biodiversity conservation and poverty reduction.</p> <p style="text-align: right;"><i>Analytical review</i></p>
ICEM	<p>32. ICEM (2003); <i>Regional Report on Protected Areas and Development. Review of Protected Areas and Development in the Lower Mekong River Region, ICEM, Indoeroopilly, Queensland, Australia.</i></p>
	<p>This review looks at the contribution that protected areas make to development in the four Mekong countries of Thailand, Lao PDR, Vietnam and Cambodia. For example, during the past decade, more than 50 per cent of foreign earnings in Cambodia and Lao PDR came from forest products. Cambodia's inland fisheries have an annual value of up to US\$500 million with 60 per cent coming from Tonle Sap Lake (a UNESCO Man and Biosphere reserve).</p> <p>This report aims to:</p> <ol style="list-style-type: none"> 1. help shape and reinforce the strategies set out in each of the national protected areas and development reports for the Lower Mekong countries; 2. influence the sectoral components of regional development plans and agreements; 3. provide a framework of strategies for a regional conservation action plan and programme. <p>The review finds that both the numbers of and the investment in protected areas in the region have increased. Yet overall the quality of protected areas has declined. The authors argue that the reason for this is the increased pressures from development and population growth placed on both protected areas and their surrounding landscape. They identify a high degree of overlap between protected areas and areas with high or medium incidences of poverty. Protected areas provide both benefits and costs to poor people in the region. Some of the costs include relocation and banning access to resources. The benefits include acting as a "safety net" in difficult times and generating revenue from tourism. A number of improvements are proposed for protected areas to benefit the poor in the Lower Mekong countries:</p> <ul style="list-style-type: none"> • establishment of a legal basis for sustainable extraction inside protected areas; • management plans and zoning schemes to be jointly developed with local communities; • building capacity and raising awareness among protected area managers for involving local people in protected area management; • supporting local communities in developing skills and knowledge for collaborating in protected area management • demonstrating pilot models to test poverty reduction strategies for protected areas; • defining a poverty reduction action plan for each protected area; • introducing special adjustment programmes for the poor wherever a conservation initiative affects local communities.

	<p>The report concludes that while protected areas are increasing in the Lower Mekong, other strategies and policies are in conflict with conservation objectives. The weakest links are therefore, institutions and policies in the region and there needs to be greater investment in protected areas and conservation. Given the geo-politics in the area, regional cooperation for conservation and development is essential.</p> <p style="text-align: right;"><i>Analytical review with case studies</i></p>
ICEM	<p>33. ICEM (2003); <i>Lessons learned in Cambodia, Lao PDR, Thailand and Vietnam. Review of Protected Areas and Development in the Lower Mekong River Region, ICEM, Indooroopilly, Queensland, Australia.</i></p>
	<p>The “Lower Mekong Protected Area and Development” assessment produced a number of lessons for the Lower Mekong region, primarily related to how these areas function within the wider development landscape.</p> <p>Direct benefits of protected areas appear to be especially important for the poorer communities, as in Lao PDR and Cambodia, but decline in importance with economic advancement, as in Vietnam and Thailand. Other than that, similar findings emerged in all four countries suggesting the following directions for change:</p> <ul style="list-style-type: none"> • <i>All protected areas need to have their values expressed in economic terms</i> - valuations should be part of protected area management plans and environmental assessments associated with development proposals affecting protected areas. • <i>Each sector needs to be made aware of the development benefits they can receive from protected areas</i> - and these should be explicitly recognised in sector plans and budgets. • <i>A more systematic application of the beneficiary or user-pays approach in all sectors is needed requiring supportive economic policies and instruments.</i> Successful pilot schemes that have already been carried out, for example, the Lao hydropower levies, should be applied consistently and replicated. • <i>Users of protected areas need to become involved in their management and protection</i> - promoting new collaborative management approaches. • <i>Underlying all these new directions is the need to build the capacity, skills and budgets of protected area managers</i> with protected area authorities having the capacity for innovation and flexibility required if protected area systems are to survive. <p style="text-align: right;"><i>Analytical review</i></p>
ICEM	<p>34. ICEM (2003); <i>Lessons Learned From Global Experience, Review of Protected Areas and Development in the Lower Mekong River Region, ICEM, Indooroopilly, Queensland, Australia.</i></p>
	<p>This document synthesises the key lessons learnt from global experience in protected areas as productive assets and as components of local and national development.</p> <p>The following areas are explored:</p> <ul style="list-style-type: none"> • global experience in protected area planning and management, with reference to the relationship between protected areas, surrounding landscapes and economic activities; • economic benefits of protected areas; • integrating protected areas within national economic development plans; • innovative financing mechanisms, such as conservation funds for protected areas; • techniques for quantifying protected area values and expressing them in monetary terms; • ensuring that local people benefit from protected areas;

	<ul style="list-style-type: none"> • use of information technology such as maps, GIS and modelling for protected area planning, management and monitoring; • the importance of marine protected areas and fisheries; • relevance of protected areas to the water management sector; • opportunities to strengthen biodiversity conservation within agricultural landscapes; • protected areas and the application of certification schemes like FSC. <p>Lessons learnt emphasise the need for protected area managers to join the development community, to begin talking the language of development, and marketing protected area services and products to enhance conservation and its financing.</p> <p style="text-align: right;"><i>Analytical review</i></p>
DGIS	<p>35. McShane, T O (ed.) (2003); <i>DGIS – WWF Tropical Forest Portfolio: Final Technical Report</i>, WWF International, Gland, Switzerland.</p> <p>This document is the final technical report of the DGIS-WWF Tropical Forest Portfolio. The project started in 1996 and covered seven sites: Gabon (two sites), Honduras, the Philippines, Pakistan, Ethiopia and Ecuador.</p> <p>Nine overarching lessons about issues that constrain integrated conservation and development were derived from the field experiences. These are:</p> <ol style="list-style-type: none"> 1. Be clear about goals and objectives: Integrated approaches with predominantly biodiversity-orientated goals often end up marginalising the interests of local stakeholders, while on the other hand such approaches with a development focus marginalise legitimate national and international interests in biodiversity. 2. Project approaches constrain conservation and development: The problem with projects is that they can reduce issues to such an extent that they may not always be sufficient to address all the complex issues at stake. Given that biodiversity loss generally results from the actions of many people across wide areas over long periods of time, projects that target relatively small numbers of people in a relatively small area over a limited period of time are often not the best approach. 3. Implementation must take place at different scales: It is easier to integrate conservation and development at larger scales where there is increased area to allow for a balance between protection, buffer zones and development activities. 4. The policy environment is as important as field-based approaches: Supportive laws, policies and regulations are necessary for efforts to be successful and sustainable. 5. Effective community development requires a strong foundation: The Portfolio found that both tenure security and community organisation are central to local involvement in conservation and development. 6. Sound institutions are necessary for effective resource management: The Portfolio found that flexibility is needed for each institution to be adapted to the specific situation. These institutions will require very specific characteristics that will need to be carefully identified. 7. Acknowledge and negotiate trade offs: While many promote ‘win-win’ solutions, the Portfolio experience indicates that difficult trade offs are more often necessary. The challenge for conservation and development lies in determining how to negotiate trade offs, whose views matter and what level of biodiversity loss can be acceptable. 8. Poverty reduction cannot be isolated from environmental conservation: It has often been assumed that making rural people richer will promote better environmental stewardship and that vice versa, a better environment will help reduce poverty. However, experience from the Portfolio suggests that active policy changes and plans are necessary

	<p>to better integrate natural resources into poverty reduction strategies.</p> <p>9. Practise adaptive management and focus on learning: It is important to develop an adaptive management framework that can support implementers to learn from both successes and failures in this area.</p> <p>An essential conclusion from this report is that more time needs to be given to implementation of such projects, to allow for the absorptive capacity of stakeholders.</p> <p style="text-align: right;"><i>Report</i></p>
DGIS	<p>36. Flintan, F (2000); <i>A Gender-Sensitive Study of Perceptions & Practices in and around Bale Mountains National Park, Ethiopia</i>, DGIS-WWF Tropical Forest Portfolio, WWF, Gland Switzerland.</p>
	<p>This research was commissioned as part of the WWF-DGIS Portfolio to obtain a better understanding of the local socio-economic, political, cultural and environmental context in and around the Bale Mountains National Park (BMNP) in Ethiopia.</p> <p>The study placed a particular emphasis on gender issues, focussing on roles and differences in mobility, social organisation, current livelihood practices and perceptions/views of the Park and 'conservation'. It took place in four villages: Gojera, Karari, Gofingria, Soba and one town: Dinsho, situated on the northern unfenced boundaries of BMNP.</p> <p>The research also looked into attitudes towards the park. During the time of the Derg (military rule from 1974-91) many households were expelled from the park and today attempts are being made to force similar evictions. This has perpetuated a very negative view of the park within the local population and has added to their insecurity. In addition, the lack of support in resettling people and the absence of any compensation for lost land and/or crops has added to their discontent and hardship.</p> <p>The local communities see few benefits accruing from the park. For example, a new health clinic was built in Dinsho but it is very poorly stocked (in both medicines and equipment) and is quickly falling into a state of disrepair having no funds for maintenance.</p> <p style="text-align: right;"><i>Analytical review</i></p>
UNEP	<p>37. UNEP (2002); <i>Poverty and Ecosystems: A Conceptual Framework</i>, UNEP, Nairobi, Kenya.</p>
	<p>The paper aims to achieve three objectives:</p> <ol style="list-style-type: none"> 1. to demonstrate how the poor depend on ecosystems and ecosystem services for achieving some of the very basic constituents of well-being; 2. to identify barriers and drivers that prevent the poor from using these ecosystem services for improving their well-being; 3. to identify policy response options for removing the barriers, redesigning or even introducing new drivers to allow the poor to improve their well-being through an ecosystem approach. <p>The paper defines three categories of ecosystems services: regulating services, provisioning services and enriching/cultural services. At the same time it identifies ten constituents of well-being (that are related to ecosystems). These are being able to:</p> <ol style="list-style-type: none"> 1. be adequately nourished; 2. be free from avoidable disease;

	<ol style="list-style-type: none"> 3. live in an environmentally clean and safe shelter; 4. have adequate and clean drinking water; 5. have clean air; 6. have energy to keep warm and to cook; 7. use traditional medicine; 8. continue using natural elements found in ecosystems for traditional cultural and spiritual practices; 9. cope with extreme natural events including floods, tropical storms and land slides; 10. make sustainable management decisions that respect natural resources and enable the achievement of a sustainable income stream. Deprivation of these services is defined as poverty. <p>The paper then attempts to link these elements of well-being to the main services that ecosystems provide. The aim of the proposed framework is to increase the ability of the poor to achieve the constituents of well-being by creating the necessary enabling conditions. UNEP identifies 6 stages in this framework:</p> <ol style="list-style-type: none"> 1. Setting the scene – initial research on current knowledge 2. Poverty assessment – using participatory methods, identify the poverty profile 3. Ecosystem assessment – determine ecosystem state, production and condition 4. Poverty – ecosystem mapping 5. Poverty-environment assessment analysis – identifying primary drivers for environmental change and their impact on the poor 6. Integration into local, regional and national policy frameworks – integrate the assessment into national strategies <p>The paper concludes that while current emphasis has been placed on the role that provisioning services provided by ecosystems play in conservation and development, an equal emphasis should be placed on the regulating and enriching services.</p> <p style="text-align: right;"><i>Analytical framework</i></p>
SNV	<p>38. Rozemeijer N (ed.) (2001); <i>Community-Based Tourism in Botswana: The SNV Experience in Three Community-tourism Projects</i>, SNV, The Netherlands</p>
	<p>This document looks at the tourism ventures of three rural communities in Botswana. These communities are comprised of Bushmen, among the poorest citizens of the country. The report focuses on the communities' efforts to use communal resources in an economically viable, equitable and ecologically sustainable way.</p> <p>With 17 per cent of the country defined as protected areas and an additional 22 per cent designated as wildlife-management areas (WMAs), nature-based revenue is an important component of Botswana's economy. Botswana's Tribal Grazing Land Policy (1975) made a significant impact on district planning and on rural development and laid the groundwork for successful CBNRM. The land that was zoned as a 'reserved area' under the Policy was gradually utilised to accommodate the semi-sedentary, hunting and gathering way of life of the Bushmen who were living outside traditional village structures. Today this land has been re-named as WMAs and its boundaries are legally defined and thereby provide a legal basis for CBNRM. WMAs are further sub-divided into hunting areas with the entire land area of Botswana divided into 163 hunting areas. These are zoned for various types of wildlife utilisation (including non-consumptive use) under commercial or community management. Presently, about 50 community-based organisations are involved in CBNRM projects all over Botswana. The most economically viable CBNRM projects in Botswana are wildlife-related</p>

	<p>and usually include some of the following: trophy-hunting; photographic, nature-based safaris; overnight accommodation for self-drive visitors and culture and handicrafts.</p> <p>SNV has been working in Botswana since 1978; currently its work is focused on the western, least developed part of the country, where most people live in poverty and the development potential is generally low. A sizeable proportion of this population is of Bushman origin (50,000–80,000 people) and SNV's programmes have all been aimed at improving their socio-economic circumstances.</p> <p>The document finishes by highlighting main findings of the review under two headings: 1) what are the pre-conditions for a community to operate a successful tourism venture; and 2) community empowerment and community-based tourism.</p> <p style="text-align: right;"><i>Analytical review</i></p>
OTHERS	<p>39. Geoghegan, T, A H Smith and K Thacker (2001); <i>Characterization of Caribbean Marine Protected Areas: An Analysis of Ecological, Organizational and Socio-Economic Factors</i>, CANARI Technical Report N. 287, CANARI, Tobago.</p>
	<p>This survey identified a number of MPAs in the Caribbean and then explored socio-economic, institutional, management and ecological aspects of each.</p> <p>With the exception of Cuba, where processes of stakeholder consultation occur generally at the political rather than the management level, nearly all the region's MPAs have used stakeholder consultation as a tool for management and about 55 per cent have active and formal mechanisms for stakeholder input. Fishing and tourism are two of the main ways in which MPAs benefit local communities. Fisheries are important for livelihoods, and only 15 per cent of MPAs completely banning fishing. Zoning is also practised in the region with close to 40 per cent of active MPAs about which information was available employing zoning as a tool for fisheries management.</p> <p>MPAs adjoin areas where poverty is significant, and therefore have the potential to improve livelihoods through appropriate management in Belize, Dominica, Dominican Republic, Jamaica and St. Lucia.</p> <p style="text-align: right;"><i>Analytical review</i></p>
OTHERS	<p>40. Adams, W M, R Aveling, D Brockington, B Dickson, J Elliott, J Hutton, D Roe, B Vira and W Wolmer (2004); <i>Biodiversity Conservation and the Eradication of Poverty</i>, <i>Science</i>, 306: 1146-1149.</p>
	<p>The specific problem of the social impacts of protected areas has been recognised by conservation planners for about two decades. In 1982, at the third World Parks Congress in Bali, the principle that the needs of local people should be systematically integrated into protected area planning was agreed. In 1992, the president of IUCN–The World Conservation Union argued that “<i>if local people do not support protected areas, then protected areas cannot last.</i>”</p> <p>The authors offer a conceptual typology of the relationships between poverty reduction and conservation in order to promote a clearer understanding of the relationship between the two. The typology presents four different ways of looking at the connections between poverty reduction and conservation:</p>

	<ol style="list-style-type: none"> 1. Poverty and conservation are different policy realms: Conservation is a goal that can be pursued independently of poverty reduction and vice versa. This position sees conservation benefiting poverty reduction indirectly by securing ecosystem services that yield economic benefits to society, for example, enhanced water yields from forested catchments. There may however, be local opportunities for ‘win-win’ strategies such as ecotourism, that combine biodiversity and poverty reduction. 2. Poverty is a critical constraint on conservation: Unless poverty is addressed conservation will fail. 3. Conservation should not compromise poverty reduction: While conservation agencies have conservation as their primary goal, in pursuing that goal they should, at a minimum, not increase poverty or undermine the livelihoods of the poor. 4. Poverty reduction depends on living resource conservation: This position rests on the claim that financially poor and socially and politically marginalised people depend on biodiversity for livelihoods and ecosystem services, and that their livelihoods can be improved through appropriate conservation activities. Conservation is therefore a tool for achieving poverty reduction, with the sustainable use of natural resources being necessary for achieving poverty reduction and social justice. <p>The authors conclude that all four positions are consistent with the call for conservation organisations to identify and monitor the social impacts of their work.</p> <p style="text-align: right;"><i>Analytical review</i></p>
OTHERS	<p>41. Salafsky, N and E Wollenberg (2000); Linking Livelihoods and Conservation: A Conceptual Framework and Scale for Assessing the Integration of Human Needs and Biodiversity, <i>World Development</i>, 28:8, 1421-1438.</p>
	<p>The authors define three types of linkages between protected areas and poverty:</p> <ol style="list-style-type: none"> 1. No linkage: In this strategy protected areas are central, and people are viewed as a threat. Historically, this approach to creating protected areas has been the most widely used. Nonetheless, it is now generally agreed that protected areas alone cannot protect sufficient biodiversity. 2. Indirect linkage: Where the economic development of communities living around protected areas is taken into account. Biosphere reserves were a first attempt at zoning areas around a core zone. The focus in these cases is on providing economic substitutes (some form of compensation) to communities who were negatively affected by the park. This approach however, still lacks the full participation of communities, with resulting encroachment, poaching and illegal harvesting within protected areas 3. Direct linkage (linked incentives): In the early 1990s conservationists began to emphasise a direct link between livelihoods and communities by making people’s livelihoods directly dependent on conservation. In this approach livelihoods drive conservation rather than just being compatible with it. <p>In order to determine the type and strength of the linkages, the authors looked at 39 case studies and assessed the degree of dependence of local people on a number of ecological dimensions. They looked specifically at:</p> <ol style="list-style-type: none"> 1. <i>Species dependence:</i> Dependence of the livelihood activity on maintaining species at the site. 2. <i>Habitat dependence:</i> Dependence of the livelihood activity on maintaining habitats at the site.

	<ol style="list-style-type: none"> 3. <i>Spatial dependence</i>: Percentage of the site on which the livelihood activity depends. 4. <i>Temporal dependence</i>: Period and frequency of biodiversity use on which the livelihood depends. 5. <i>Conservation association</i>: Dependence of the livelihood activity on associated conservation values. <p>The authors reach the following three broad conclusions:</p> <ol style="list-style-type: none"> 1. Overall the framework is helpful to force people to determine whether it is possible to apply a linked incentive strategy. 2. Practitioners need to develop the appropriate mix of strategies: including protected areas, unlinked incentives, linked incentives and other strategies such as education and awareness. 3. The need to identify future research needs, including testing the framework <p style="text-align: right;"><i>Analytical review</i></p>
OTHERS	<p>42. Scherr, S (2003); <i>Hunger, Poverty and Biodiversity in Developing Countries</i>, a paper presented at the Mexico Action Summit, Forest Trends, Washington DC, USA.</p>
	<p>The author highlights the different links between hunger, poverty and biodiversity. She argues that rural populations continue to grow and to face food insecurity and poverty.</p> <p>In some cases projects that have been promoted as solutions to either hunger, poverty or biodiversity loss, have ended up exacerbating one or both of the others. However, on a positive note she argues that in fact there are many opportunities for synergies between poverty, hunger and biodiversity. These include: ecoagriculture, developing biodiversity reserves as community ‘safety nets’, strengthening local communities ownership rights over natural resources, reforming governance structures and promoting partnerships.</p> <p>She makes three conclusions:</p> <ol style="list-style-type: none"> 1. That one of the causes of hunger is biodiversity loss. 2. That biodiversity will not be conserved unless food security is addressed. 3. Those strategies which combine biodiversity and food security need to be widely promoted. <p style="text-align: right;"><i>Analytical review</i></p>
OTHERS	<p>43. Brechin S R, P R Wilshusen, C L Fortwangler, P C West (2002); <i>Beyond the Square Wheel, Society and Natural Resources</i>, 15, 41-64, Taylor & Francis.</p>
	<p>The main thread for this paper is that there is a false dichotomy between interventions that are pro-nature and those that are pro-people. The authors raise concerns that given the continued precarious state of the world’s biodiversity, there may be a surge in attempts to establish protected areas in the authoritarian way that typified some of the first protected areas. They emphasise that while they do not question the ultimate goals of conservation, it is the processes to reach these goals that are in doubt (from a social science perspective). The authors advocate interventions where the false dichotomy is removed and people are actively engaged and are central to any conservation effort.</p> <p>They recommend a socially-just approach to conservation, which they argue has not been done to date. They propose six ways to achieve this:</p>

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| | <ol style="list-style-type: none">1. Establish explicit parameters or standards for social processes linked to conservation.2. Apply knowledge in context to guide responses that are situation-specific.3. Develop systematic social scientific knowledge that can be fully integrated into conservation.4. Increase capacity for organisational coordination and collaboration.5. Establish parameters for appraisal of social process.6. Establish dialogue among social and ecological scientists to find common ground and generate strategies. |
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Analytical review

Ecotourism Literature

1. Wunder, S (2000); Ecotourism and Economic Incentives – An Empirical Approach, *Ecological Economics*, 32: 465–479.

The author explores the contribution that ecotourism can make to local poverty reduction. He starts off with two hypotheses that:

1. local models of tourism generate more benefits than large, external operations;
2. ecotourism provides a strong argument for conservation.

He then tests these hypotheses using the Cuyabeno Wildlife Reserve in the Ecuadorian Amazon region, near the borders with Colombia and Peru. Through interviews with the local communities he concludes that: communities receive significant financial benefits from tourism (greater than any other income source), and tourism serves to increase awareness among local communities of the importance of their environment and of its protection. Nonetheless, some concerns stem from tourism including the risk of higher deforestation to make place for infrastructure and a high dependence by poor people on a volatile sector. He concludes that the impacts of ecotourism are not always as simple as much of the literature leads us to believe.

Analytical review

2. Lindberg, K (2001); *Protected Area Visitor Fees Overview*, Cooperative Research Centre for Sustainable Tourism, Australia.

Lindberg explores the pros and cons of charging visitors' fees in protected areas. Though fee decision-making processes will vary across locations, he recommends that the following four activities be part of every process:

- explicitly consider both the advantages and disadvantages of fees;
- consider and state fee objectives;
- conduct research to guide decision-making;
- work with relevant stakeholders, including tour operators and local communities.

The author highlights a number of possible objectives for charging fees:

- *Cost recovery*, where sufficient revenue is generated to cover part or all of tourism's financial costs (e.g. construction and maintenance of a visitor centre) and other related costs (e.g. repairing ecological damage).
- *Generation of 'profit'*, using revenue to finance traditional conservation activities or to achieve other objectives.
- *Generation of local business opportunities*, which may involve low fees in an effort to maximise number of visitors and/or the earmarking of fees for improvements.
- *Provision of maximum opportunities for learning and appreciation* of the natural resource, which may also involve low fees.
- *Visitor management* to reduce congestion and/or ecological damage, which would involve fees high enough to influence visitor behaviour.

The advantages of charging entry fees are: revenue generation, economic efficiency, equity across users and non-users, enhanced opportunities for local businesses, visitor management and enhanced site and experience quality. The paper concludes that demand for natural areas generally is not price responsive and that a small increase in fees (e.g. of less than US\$10) usually has a modest effect on demand.

Review

3. Lindberg, K (2001); *Tourist "Consumption" of Biodiversity: Market Characteristics and Effect on Conservation and Local Development*, Paper presented at the World Bank/OECD Workshop on Market Creation for Biodiversity Products and Services, Paris, France.

This paper (adapted from the one above) discusses the value of charging user fees in parks.

A survey of protected areas conducted in the early 1990s suggests that about one-half of the world's protected areas charged entrance fees and it is likely that this proportion has increased since then. Among the arguments in favour of charging a user fee, Lindberg highlights: employment and the possibility of feeding that money back into conservation, maintenance of facilities in the park and conservation work. The arguments against charging a fee are that some people perceive parks as being of public access. Charging a fee would, therefore, reduce the number of visitors (both good and bad). It could also benefit local businesses if park entrance were free, as tourists would have more free cash to spend on souvenirs, handicrafts or other services around the protected areas.

Lindberg quotes a study from Price Waterhouse (1994) comparing the potential revenue from cattle versus conservation in Zimbabwe. It showed that for the Devure Ranch, cattle had the potential to generate gross revenue of between Z\$22 and Z\$37/ha/yr (Z\$6.5 = US\$1 at the time) while a small wildlife operation with tourism, hunting and culling was estimated to generate Z\$67/ha/yr. The author concludes that while some tourism could affect ecologically sensitive areas, generally the financial benefits outweigh these concerns.

Analytical review

4. Vanasselt, W (2000); *Ecotourism and Conservation: Are They Compatible?* Earthtrends, World Resources Institute, Washington DC, USA.

The author argues that well-planned and well-managed ecotourism offers greater potential to bolster local and rural economic development than traditional tourism. However, the growing popularity of a tourist area can bring with it increasing prices for land, food and other products, to the detriment of local residents. For instance, in Tonga, tourism-driven inflation has caused shortages of arable land.

In some countries, such as Kenya, policies to share ecotourism benefits with local residents have been put in place. Ecotourism planners also note the importance of income from handicrafts sales, use of locally grown food in restaurants and training programmes that enable employment of communities as tour guides, hotel managers and park rangers.

The author notes that both tour operators and visitors have a role to play by ensuring that trips comply with ecotourism principles. For instance, developers can choose sites according to environmental conditions and local support and they can use sustainable design principles in resort construction.

Analytical paper

5. Spenceley, A (2005); *Tourism Investment in the Great Limpopo Transfrontier Conservation Area Scoping Report, Transboundary Protected Areas Research Initiative, University of the Witwatersrand, South Africa.*

This paper looks at the potential for ecotourism in the Greater Limpopo Transfontier Conservation Area (GLTFCA) and its impact on communities and the environment in South Africa, Zimbabwe and Mozambique. It recognises that it may be too early to undertake a thorough assessment of ecotourism impacts to date, particularly given the vast difference in economic and political levels of all three countries.

Taking the example of the Makulele people in South Africa: In 1969, they were forcibly removed by the state from a 24,000 ha area that they inhabited in the north of Kruger National Park (KNP). They were compensated for their relocation in 1998, with the restitution of their land and the creation of a contractual park. A 25-year agreement was forged between the Makulele and SANParks (the South African park management authority) to return the land to the people, although the title specified that the land may only be used for wildlife conservation and sustainable use of natural resources.

Trophy hunting was promoted by the Makulele Common Property Association (CPA) which offered a private safari company the rights to hunt a very limited number of elephants and buffaloes in 2001, 2002 and 2003. The first hunt in 2001 earned the CPA about R520,000 (about US\$80,000), the second one, a further R800,000 (about US\$130,000), in 2002 approximately R 1.8 million (about US\$180,000) was raised and in 2003 about R1.5 million was earned from trophy hunting. The money went to a variety of development projects including improving the schools, bursaries for top students, boreholes and food for the poorest families in the villages. After 2003, largely because of the impact of hunting on nature safaris, they decided to switch to photographic tourism. They anticipated that there would be about 150 full time jobs for the Makulele earning about R375,000 per month.

In Zimbabwe, tourism has proven more difficult to develop. People in Sengwe have indicated that their experience of CAMPFIRE is that the state and rural district councils are not interested in sharing benefits, but rather aim to retain as much revenue as is possible for their bureaucratic processes. There is a lack of institutional structures in the area and problems of fuel availability and other shortages.

In Mozambique, in Canhane, the NGO Helvetas facilitated the delimitation of an area of 7024 ha so that the community 'owned' the land on which a tourist lodge was to be built. Helvetas organised a constitution for the association, sent employees on tourism and hospitality training courses, marketed the lodge and currently does the financial management. Between May and October 2004, the lodge accrued 8 million Metacais (about US\$40,000) from the accommodation and services sold to tourists. The agreement currently states that 50 per cent of the money should be spent on community infrastructure, and 50 per cent on investment for the camp.

The report identifies a number of constraints for ecotourism development in the GLTFCA including tenure, resettlement issues as well as a big disparity in the political and socio-economic climate across the three countries. It concludes that while it may be too soon to evaluate what the environmental and social impacts of tourism investment will be in the GLTFCA as the destination is not sufficiently developed, through the process of planning and development, stakeholders are learning more about the complex issues involved in catalysing a sustainable nature-based tourism industry.

Scoping report

6. UNEP, (2005); *Forging Links Between Protected Areas and the Tourism Sector: How Tourism can Benefit Conservation*, UNEP, Division of Technology, Industry and Economics, Paris, France.

This manual is designed to provide practical guidance to managers of World Heritage Sites and other protected areas on ways to develop and promote tourism such that it promotes conservation and site protection. It provides site managers with an overview of the contributions that tour operators and other tourism companies can make to protected areas. This information can help protected area managers develop and improve the links between sites and the tourism sector and build partnerships with tourism companies and businesses.

The survey of tourism companies conducted for this manual shows that linkages between protected areas and tourism companies are often already part of their operations and simply need to be strengthened to provide maximum benefits for both conservation and tourism.

Tour operators and tourists can play a valuable role in protected areas, for instance by raising awareness about the purposes and importance of individual protected areas, supporting them financially through park entrance fees and donations, providing in-kind support (such as equipment), promoting and buying local handicrafts or volunteering.

Guidelines

7. Font, X, J Cochrane and R Tapper (2004); *Pay per Nature View, Tourism for Protected Area Financing: Understanding Tourism Revenues for Effective Management Plans*, Leeds Metropolitan University, Leeds, UK.

The report explores two questions: “*what mechanisms can protected areas use to raise funds from tourism?*” and “*to what extent should protected areas raise funds from tourism?*” The report looks at the opportunity for tourism in protected areas, the different management structures that can support this and the types of financing structures.

The authors note that while tourism can be a source of benefits for protected areas, in many cases, protected areas may not have the resources or access to the investment that is needed to turn these potential benefits into reality. Many areas are also not sufficiently equipped to ensure that tourism supports conservation goals. Additionally, any adverse impacts that are caused as a result of tourism are a cost to protected areas and often to local communities.

Ease of access to a protected area and its overall attractiveness will be the two main determinants of its popularity as a tourist destination. Appropriate management plans that are able to balance tourism and conservation objectives will need to be in place. The authors caution that given the fluctuations in tourism, over-dependence on revenue from tourism can be a problem for protected areas.

Analytical review

8. Bushell, R (2005); *Building Support for Protected Areas through Tourism*. In: McNeely, Jeffrey A (ed), *Friends for Life: New Partners in Support of Protected Areas*, IUCN, Gland, Switzerland and Cambridge, UK.

The author emphasises the role of the tourism industry in enhancing understanding, appreciation and support for our cultural and natural environments. However, if badly managed, tourism also has the power to damage our environment.

Tourism can provide an important additional source of income for protected areas, generated through donations, entrance and user fees, levies, concession fees and licences, taxes on purchases by visitors and increased general tax revenues from economic activity associated with tourism. Unfortunately, the need for additional funding sometimes leads to increased and uncontrolled tourism which ends up putting extra pressure on the protected area. The challenge is to derive economic benefit without unacceptable degradation of other values, both social and environmental. Tourism to protected areas can also be an educational opportunity to raise tourists’ awareness of the cultural and environmental heritages being protected. It can thus be a powerful vehicle for disseminating conservation messages through guides, story telling, brochures, displays and souvenirs.

Benefits from tourism should also be shared with local communities and visitor use must be compatible with the overriding mission of a protected area. The author describes a few examples of sustainable tourism. She concludes that for tourism to be an effective conservation tool we must better understand both its beneficial effects and its negative consequences. This implies increasing capacity among park staff and communities to ensure a much better level of understanding of park visitation patterns, numbers and trends.

Analytical paper

9. WWF (2001); *Guidelines for Community-based Ecotourism Development*, WWF International, Gland, Switzerland.

WWF's guidelines on ecotourism recognise that ecotourism is not a panacea. Nonetheless, if managed carefully, WWF believes that community-based ecotourism, which it defines as having a specific social dimension, where communities are involved in and control to a large extent the development and management of the ecotourism project, can be a tool that strengthens biodiversity conservation while improving communities' well-being.

The guidelines are divided in four parts, each with a series of specific guidelines:

1. **Considering whether ecotourism is an appropriate option:** Before beginning a community-based ecotourism project it is important to ensure that the conditions are appropriate.
2. **Planning ecotourism with communities and other stakeholders:** It is important to consider the necessary structures and processes that should be in place to deliver the required social and environmental benefits.
3. **Developing viable community-based ecotourism projects:** An appropriate business plan is very important to ensure the viability of an ecotourism venture.
4. **Strengthening benefits to the community and the environment:** Specific measures can be optimised to ensure the required delivery of social and environmental benefits.

Guidelines

Community Management of Protected Areas

1. Pimbert, M P and J N Pretty (1995); *Parks, People and Professionals: Putting 'Participation' into Protected Area Management*, United Nations Research Institute For Social Development, International Institute for Environment and Development and WWF, Discussion Paper No 57, UNRISD, Geneva, Switzerland.

The paper argues that conservation has traditionally viewed people as being bad for natural resources. Therefore, protected area policies and practices have tended to exclude people and to discourage all forms of local participation, thus neglecting local people's knowledge, rights to resources and their traditional management systems and institutions. The main theme of the paper is to determine how to "put people back into conservation".

The authors reflect that not all communities will have the same approach to conservation, and it is therefore, not always easy to consider the relationship between people and protected areas as one that can be applied everywhere: the relationship will differ greatly depending on local circumstances. This implies that promoting successful conservation will require a better understanding and promotion of those social processes that are compatible with conservation. Rather than top-down approaches to conservation, new participatory processes are required. The paper concludes that an effective vision for conservation would have authorities and local people managing protected areas under new forms of joint or co-management agreements.

Analytical paper

3. Gilmour, D, Y Malla and M Nurse (2004); *Linkages between Community Forestry and Poverty*, Regional Community Forestry Training Centre for Asia and the Pacific, Bangkok, Thailand.

This paper explores the links between community forestry and poverty, with an emphasis on Asia. Some of the lessons may be applied to protected areas.

Evidence from case studies, shows that community forestry has provided some tangible benefits to poor people and the review demonstrates community forestry's potential to deliver poverty reduction. For example, in Nepal, a rapid appraisal of forest product utilisation, income and patterns of expenditure of 1,788 Forest User Groups (FUGs) was carried out in 2002 and extrapolated to all FUGs in the country. The results indicated that the total annual cash income from the sale of forest products was Rupees 747 million (more than US\$10 million) with 100 per cent of these benefits going back into the FUGs. About 36 per cent of the income from community forests was spent by the FUGs on community development activities such as building schools, roads and drinking water facilities while only 3 per cent was targeted towards specific pro-poor activities.

The authors note that the challenge for the future is to harness the contribution that forests can make to poverty reduction on a large scale.

Analytical review

4. Arntzen, J W, D L Molokomme, E M Terry, N Moleele, O Tshosa and D Mazambani (2003); *Final Report of the Review of Community-Based Natural Resource Management in Botswana*, Report prepared by the Centre for Applied Research for the National CBNRM Forum.

This report was commissioned in 2003 to review Botswana's CBNRM projects. It looks specifically at the current problems and constraints of CBNRM projects and recommends areas for improvements. CBNRM projects expanded in Botswana during the 1990s stemming concerns about communities' abilities to manage the revenue generated. The authors clarify that CBNRM in Botswana include not only wildlife use (hunting and safaris) but also use of NTFPs.

Evidence so far indicates the CBNRM projects in Botswana appear to have a positive socio-economic impact, particularly in the poorer western and northern region. The report concludes with 24 specific recommendations to different stakeholders in Botswana, which include the need to clarify roles, improve monitoring and evaluation and improve benefit sharing.

Analytical review

5. Bhatt, S (2005); *Opportunities and Limitations for Benefit Sharing in Select World Heritage Sites*, (draft report . http://www.enhancingheritage.net/docs_public.asp - accessed 2/2/07)

This study, which focuses on two protected areas (Keoladeo and Kaziranga) in India, examines the real and potential benefits that communities are obtaining from these areas and also reviews the benefit-sharing mechanisms in place.

Over 70 per cent of India's population lives in rural areas and studies estimate that between three and six million people live either in or around protected areas and are dependent on their resources for survival. Fuelwood, fodder and medicinal plants are some of the important non timber forest products (NTFPs) rural Indian communities depend upon. However, according to the 1972 Wildlife Protection Act (further amended in 1991 and 2002) collecting such NTFPs is not allowed in protected areas. In 1991, in an attempt to improve the economic plight of rural communities, the government of India launched a scheme called ecodevelopment in 80 protected areas across the country which aims to conserve biodiversity through local economic development.

The author concludes that tourism offers the best potential for benefit-sharing from both parks. She makes the following recommendations to strengthen benefit sharing mechanisms:

- carrying out detailed socio economic studies for each protected area;
- strengthening existing mechanisms;
- building capacity of local community members;
- building capacity of park staff;

- continuing dialogue with local communities;
- involving local communities in park management.

Analytical review

Economic Instruments

1. UNEP (2004); *Economic Based Instruments in Biodiversity Related Multilateral Environmental Agreements*, UNEP Economics and Trade Branch, Geneva, Switzerland.

This paper looks at the main areas where economic instruments (such as property rights, charges, subsidies or environmental funds) can be used by national policy-makers to enhance synergies between multilateral environmental agreements (MEAs). One of the three main MEAs it examines is the CBD which has implications for protected areas.

In this document UNEP describes how different economic instruments such as property rights and trust funds can be applied to conservation. However, for economic instruments to be applied effectively the following needs to be considered: valuation of ecosystem goods and services, participatory mechanisms and capacity. Importantly, economic instruments have an important role in supporting biodiversity conservation by reflecting real costs and benefits of different activities that impact on the environment.

The paper concludes that economic instruments could be used more widely in MEAs and that positive experiences in their use should be replicated.

Analytical review

2. Lambert, A (2006); *Sustainable Financing for Environmental Projects in Africa: Some Ideas for Consideration*, UNEP, Nairobi, Kenya.

This paper reviews four promising conservation finance mechanisms that could be useful in Africa:

1. Environmental funds
2. Payments for environmental services
3. Debt-for-sustainable development swaps
4. Carbon offset projects

It describes each mechanism and conditions under which they are most likely to succeed. Examples from Africa where these mechanisms have been or could be applied are highlighted.

Analytical review

3. Emerton, L, J Bishop and L Thomas (2006); *Sustainable Financing of Protected Areas: A Global Review of Challenges and Options*. IUCN, Gland, Switzerland and Cambridge, UK.

This review seeks to identify the key factors which influence the success of different financing mechanisms and to provide recommendations for improving the future sustainability, efficiency and effectiveness of protected area financing. The analysis is supported by 29 case studies which provide concrete examples of how specific financing mechanisms are being used in a range of contexts. For example, in Tanzania, TANAPA (the park authority) established a fund in 1995 to ensure that 7.5 per cent of the national park revenue goes back into community development projects.

The authors conclude with specific recommendations to park managers, governments, donor agencies and the CBD. These include the need for additional funding to protected areas, diversifying funding sources to individual protected areas and undertaking a global study on protected area financing.

Analytical review with case studies

4. Vedeld, P, A Angelsen, E Sjaastad and B G Kobugabe (2004); *Counting on the Environment: Forest Incomes and the Rural Poor*, Environmental Economics Series, Paper No. 68, World Bank, Washington DC, USA.

The study, which focuses on forest environmental income (defined as “*rent (or value added) captured through consumption, barter, or sale of natural capital within the first link in a market chain, starting from the point at which the natural capital is extracted or appropriated*”) in 54 case studies, aims to investigate the extent to which people in rural areas of developing countries depend on income from forest environmental resources, how this dependence is conditioned by different political, economic, ecological and sociocultural factors and makes recommendations for “best practices” in assessment of forest environmental income. The study highlights the importance of environmental income (including from within and around protected areas) to poor, rural people.

A main policy message to governments, donors, and international agencies is that leaving forest environmental income out of national statistics and poverty assessments will lead to underestimation of rural incomes. Major conclusions include:

- Forest environmental income constituted an average of about 22 per cent of the household income in the sample of 54 case studies. In absolute terms, the mean annual forest environmental income was about US\$678 per year (adjusted for purchasing power parity) per household in the sample, while the median income was US\$346, representing about 19 per cent of total income.
- The figures suggest that forest environmental incomes contribute significantly to the economic production of goods and services and to welfare levels but they are often omitted from calculations of national economic statistics and poverty assessments thus leading to flawed decision-making and inefficient resource use.
- Wild food and fuelwood were the two most important forest products for the households in the sample, accounting for an average of 70 per cent of all forest income.
- Forest income was highest in Latin America, and lowest in East Africa.
- Forest environmental income tended to increase with distance to market; that is, more-remote communities had higher forest environmental incomes (as their dependence on forests was the only income opportunity).
- About half of forest environmental income was earned in cash.
- Forest environmental income was most important to the poorest, with forest income rising from 17 per cent for the richer households to 32 per cent for the poorer ones in the sample.

Analytical review with case studies

Regional Case Studies

1. Koziell, I and K Y A Inoue (2006); *Mamirauá Sustainable Development Reserve: Lessons Learnt in Integrating Conservation with Poverty Reduction, Biodiversity and Livelihood Issues*, No. 7, IIED, London, UK.

This study looks at lessons learnt from ten years experience in the Mamirauá Sustainable Development Reserve (SDR) an area of flooded forest (*várzea*) in the upper reaches of the Amazon in north-western Brazil. About 1,800 people live in 23 settlements within the focal area of the Reserve, with an additional 3,600 classified as ‘resource users’, living in 37 settlements adjacent to the Reserve. It is of exceptionally high global and local biodiversity value with many endemic species, a high plant diversity and 400 recorded fish species – one of the most diverse fisheries in the world.

While initially a strict reserve, in the 1980s scientists and others pushed for it to become a sustainable development protected area (achieved in 2000 under Brazil’s SDR decree) promoting the long term

development of local people in harmony with the conservation objectives of the protected area. The argument for this change was that there were too many external pressures and not enough local supervision and protection; therefore, the best way to protect the area in the long term was to allow local people to benefit from it while protecting it. After ten years, a number of lessons emerged from this change and these are highlighted in the report.

The main benefits for local people can be split under: community fisheries management, community forestry and ecotourism. Communities local to the tourist lodge for instance, benefit as employees in the lodge and as guides – in total it employs about 30 people, proving a valuable source of income to the community – adding up to 84 per cent to household income. One hundred and twenty community fishermen are members of the Tefé Fishermen's Association which has helped fishermen market their produce and provided them with training in stock management. The community forestry management component emphasised that rules be established by the community themselves. The incentive for communities to be involved in forest management lies in the fact that sustainably produced timber, with authorisations from Brazil Environmental Agency (IBAMA), has a higher market value than illegal timber.

The paper highlights the national importance of this project in demonstrating that people's socio-economic objectives are compatible with protected areas and in serving as a model for Brazil.

Case study

2. Pham Khanh Nam, Tran Vo Hung Son, H Cesar and R Pollnac (2005); *Financial Sustainability of the Hon Mun Marine Protected Area : Lessons for other Marine Parks in Vietnam, Poverty Reduction and Environmental Management, Institute for Environmental Studies, The Netherlands.*

This study uses the Hon Mun marine protected area (MPA) to explore the relationship between economic values of coral reefs, coastal poverty and policy interventions in Vietnam. The Hon Mun MPA is the most heavily used marine reserve in Vietnam. About 5300 people live in the area and depend on the MPA. In a survey of direct users, reef-related aquaculture was considered the second most important productive activity for 24 per cent of respondents and near-shore fishing was the first for 47 per cent of respondents. The gross fisheries value is estimated at US\$15,538 per km². The MPA also currently attracts around 300,000 visitors per year, although the number of visitors directly using the coral reefs, through diving and snorkelling, is much lower.

Given the precarious financial situation of the Hon Mun MPA, the authors assess scenarios for the park with and without management. They conclude that the "with management" scenario is best and that funding for this could best be achieved through tourism promotion. The authors advocate a user fee for access to the park as a sustainable source of income for the park. They also suggest that a proportion of these funds could be allocated to improving income generation programmes for affected fishermen.

Case study

3. Bandyopadhyaya S, M N Humavindu, P Shyamsundar and L Wang (2004); *Do Households Gain from Community-based Natural Resource Management? An Evaluation of Community Conservancies in Namibia, World Bank, Washington DC, USA.*

In Namibia the Nature Conservation Ordinance of 1975 created the legal framework for conservancies; areas where individual farmers pool land to provide larger areas of wildlife habitat where they can use wildlife for game, trophy hunting and tourism. This paper assesses the extent to which conservancies have been successful in improving the lives of rural households using a 2002 survey of 1,192 households in seven conservancies in Kunene and Caprivi. The results suggest that community conservancies have a positive impact on household welfare with households gaining from conservancies either through cash income or non-cash benefits such as meat, NTFPs or infrastructure. The survey data did show however, that only a

small number of households obtain cash income: some 12 per cent of surveyed households report conservancy-related income, although this figure rose to 27 per cent of households in one particular conservancy. Larger perceived benefits were non-financial.

While the report focuses on household income and expenditure as indicators of conservancy benefits, these may not fully account for other community-level benefits that also occur as a result of conservancies. Despite data limitations, the authors conclude that overall, conservancies have a positive effect on household welfare. They find that a majority of household welfare indicators are higher for established conservancies relative to control groups.

Case study

4. Wilkie, D S, G A Morelli, J Demmer, M Starkey, P Telfer and M Steil (2006); Parks and People: Assessing the Human Welfare Effects of Establishing Protected Areas for Biodiversity Conservation, *Conservation Biology*, 20: 1, 247–249, USA.

This paper argues that conservation and social scientists should conduct rigorous and controlled studies to determine the influence that establishing and managing protected areas has on local people. These studies should track the changing health and wealth of a statistically meaningful set of families before and after the establishment of a protected area.

As a first example of such a ‘Parks and People’ study, the authors have initiated a 5-year research project in Gabon where they are tracking the welfare of 1,000 households that have traditionally used park resources around four of the 13 recently established national parks. They are comparing their livelihoods with those of an equal sample of ‘control’ households that live outside the influence of the national parks.

Case study

5. Baird, I (2000); *Integrating Community-Based Fisheries Co-Management and Protected Areas Management in Lao PDR: Opportunities for Advancement and Obstacles to Implementation*, Evaluating Eden Series, Discussion Paper No.14, IIED, London, UK.

This paper explores the importance of co-management for fisheries in Lao PDR and Cambodia. In Lao PDR, Fish Conservation Zones (FCZs) which are ‘no-take’ zones are the most important co-management tool for fisheries. These zones have been established in areas selected using indigenous knowledge. Since their establishment, villagers have reported significant increases in stocks of over 50 fish species.

Fish are the most important source of animal protein for villagers living in and around protected areas in central and southern Lao PDR and northeast Cambodia. Therefore, the sustainability of fisheries is critical to food security. If fish are in short supply, villagers may end up increasing hunting pressure on vulnerable populations of birds and mammals.

In 1999, villagers from both Kokpadek and Chan villages (both situated in the buffer zone of Xe Pian protected area) reported that increased fish catches in their communities had resulted in significant improvements in the management of terrestrial wildlife and forest resources near their villages as the availability of fish reduced the need for hunting. They also felt that overall socio-economic conditions in their communities had improved. For instance, in Kokpadek prior to the establishment of fisheries co-management regulations, villagers reported that there were limited opportunities for generating income during the dry season, and up to 60 per cent of the working adult population migrated to the Boloven Plateau in Champasak Province to obtain seasonal employment as coffee pickers. Now less than 10 per cent of the work force reportedly migrates to Champasak.

The paper finishes by looking at the reasons why cooperative arrangements are both feasible and particularly important in fisheries. It concludes that fisheries co-management arrangements are more likely to be successful and can create a precedent and establish trust useful when establishing further co-management structures, for instance in forests areas.

Case study

6. Benítez, S (2001); *Visitor Use Fees and Concession Systems in Protected Areas: Galápagos National Park Case Study*, TNC, Virginia, USA.

This paper discusses the impact of tourism revenue and distribution in the Galápagos National Park (NP). Specifically, it describes the changes in income and income distribution in the Park since the adoption of new legislation.

In 1998 special legislation was enacted by the Ecuadorian government concerning the protection of the Galápagos, which notably included an increase in visitors' fees. Through visitor fees, tourism now provides an important economic contribution to the islands; 95 per cent of the funds generated stay in the province of Galápagos (inhabited by 16,000 people), and 45 per cent of those funds go directly to management of the Galápagos NP and the marine reserve. The funds channelled to the Galápagos National Institute (INGALA), the Galápagos Municipality and the Galápagos Provincial Government must be used for purposes of education, health, sports and environmental projects, environmental services or visitor services. Prior to implementation of the law, an average of only 30 per cent of visitor fee reverted to the budget of the Galapagos NP, while the remainder went to INEFAN (Ecuadorian Institute of Forests, Protected Areas and Wildlife).

The author notes that support from the local population is a key factor in maintaining a valuable recreational service for visitors. The usefulness of this revenue to local people depends upon local participation in decision-making and on the effectiveness of the local government in identifying and investing in beneficial policies and projects.

The paper thus suggests that there are several factors that must be addressed in order to have an effective income-generating mechanism using visitor use fees and for these fees to support conservation in the Galápagos NP, notably:

- natural capital must be given due consideration in the decision-making process;
- other environmental services in the Galápagos Islands must also be quantified, e.g. the scientific value of the genetic resources and the value of maintaining ecological integrity of marine resources;
- funds obtained through ecotourism must be invested in providing alternatives to local people who otherwise are likely to convert the land to other unsustainable uses;
- efficient pricing of visitor fees should be based on the point where demand for the resource equals the marginal cost of providing that resource;
- the revenue obtained from visitor fees must be invested in conservation of the site and in improving the management capacity of the park service. Investment in human capital is also essential and offering continuous training and competitive wages for protected area personnel will attract high-level professionals;
- effective control systems must be established in order to ensure effective monitoring of the visitor sites. By monitoring the carrying capacity at each visitor site, protected area managers can avoid excessive negative environmental impacts.

The author concludes that the Galápagos NP can potentially support livelihoods both directly through funds from ecotourism and indirectly through non-extractive use.

Case study

7. Baldus, R, B Kibonde and L Siege (2003); Seeking Conservation Partnerships in the Selous Game Reserve, Tanzania, *PARKS*, 13:1, IUCN, Gland, Switzerland.

In this review, the authors look at progress made in funding the Selous Game Reserve (SGR) from the years 1991 to 2001 thanks largely to trophy hunting.

Collaborative arrangements have been developed with local authorities and 51 communities in the buffer zones. A 'retention fund scheme' has been established, whereby half of the income generated remains with the reserve for management and investment purposes (around US\$1.8 million per annum).

Initially, the relationship between the communities and the SGR staff was difficult. Therefore, to promote cooperation between SGR staff and villagers, the Selous Conservation Programme supported various self-help projects on a 50 per cent subsidy basis. Over 250 self-help projects were thus carried out in the first seven years. This support assisted capacity building and development, and was gradually phased out after mutual trust had been established. From 1999–2002, a total of US\$890,000, or 11 per cent of the total retention fund, was committed to infrastructure projects. The fund is also used for SGR administration, management and anti-poaching activities. Poverty reduction is one of the objectives of the national Wildlife Policy and the SGR administration feels that supporting the communities in these development activities provides an important contribution.

The government of Tanzania is now beginning to codify community-based conservation, but the state still retains ownership of wildlife and neither the degree of autonomy of the communities nor their share in revenue from wildlife has finally been decided. This shows that the process remains complicated and that there is still a long way to go.

Case study

8. Castro Hernández, J C, R Hernández Jonapá, S Nájuez Jiménez, S Rodríguez Alcázar, C Tejeda Cruz, A Vázquez Vázquez, K Batchelder and A Z Maldonado Fonseca (2003); *Community-based Conservation : Participatory Conservation in Buffer Zone Communities in the Natural Protected Areas of Chiapas, México*, Instituto de Historia Natural Comisión Nacional de Áreas Naturales Protegidas, The Nature Conservancy, Arlington, USA.

This study looks at four biosphere reserves in Mexico that involve communities in their management. In all cases, community-based natural resource management was favoured as a way to align development objectives with biodiversity conservation objectives.

The four reserves are El Triunfo, Encrucijada, El Ocote and Sepultura. El Triunfo, which was designated a biosphere reserve in 1990, covers an area of 119,177ha. La Encrucijada Biosphere Reserve, declared in 1995, covers an area of 144,870 ha. Approximately 29,900 inhabitants live within the Reserve distributed in 78 communities. El Ocote Biosphere Reserve totals 101,288 ha and was established in 2000. Over 8,000 people live there, owning half of the land, while the other half is federal land. La Sepultura biosphere reserve was declared in 1995 with an area of 167,309 ha and a population of 23,145.

Compensation programmes helped farmers to change their practices to reduce their impact on the reserves while obtaining a livelihood. Conclusions from the analysis of these four reserves include the fact that a priority for those working on conservation issues is to integrate community social issues within protected areas and to maintain a close relationship with these communities in order to achieve common goals. In the long term the vision is for communities to fully take over management of these four reserves.

Case study

9. Silva, P (2006); *Exploring the Linkages between Poverty, Marine Protected Area Management, and the Use of Destructive Fishing Gear in Tanzania*, World Bank Policy Research Working Paper 3831, February 2006.

This paper investigates the linkages between household characteristics, MPA activities and household choice of fishing gear. The study is based on household surveys at six sites in Tanzania, where communities are also involved in various development activities such as environmental education, alternative livelihood development, ecotourism, micro loans and where they receive external financial and technical assistance. Fishing is the primary occupation and source of income for 32 per cent of households in the sample, second to farming, which is practised by 40 per cent of households. The author finds that some aspects of poverty increase the likelihood of using destructive fishing gear while MPAs do not directly affect household choice of fishing gear. However, households participating in alternative income-generating activities are less likely to use destructive fishing gear, suggesting that MPA support to these activities in Tanzania has a positive influence on household choice of fishing gear.

Given that Tanzania has committed to increasing the percentage of its coastal and marine areas under protection to 10 per cent by 2012 and 20 per cent by 2025, knowledge of whether MPAs can effectively reduce the use of destructive fishing gear and how MPA activities impact the poor is essential to inform relevant policy decisions. The author concludes that while a direct link between poverty and the use of destructive fishing gear cannot be established, it appears that some aspects of poverty contribute to the use of destructive fishing gear. Specifically, the analysis concludes for instance, that:

- households living in MPA villages are less likely to target near shore reef species;
- the use of destructive fishing gear is associated with higher consumption levels, whereas participation in alternative income-generating activities does not significantly affect household consumption levels;
- households headed by women or where there are food shortages are more likely to use destructive fishing gear;
- the proportion of households employed in non-fishing and non-farming activities is two to three times higher for MPA villages than for non-MPA villages;
- households residing in MPA villages have lower levels of consumption compared to households in non-MPA villages (although there is no baseline data to compare the difference in household consumption levels between MPA villages and non-MPA villages prior to the establishment of MPAs).

Case study

10. Metcalfe, S (2005); *Transboundary Protected Area Impacts on Communities: Case Study of Three Southern African Transboundary Conservation Initiatives*, AWF Working Papers, AWF, Nairobi, Kenya.

The author introduces the concept of transboundary protected areas, then focuses specifically on three such protected areas in southern Africa: the Limpopo Transfrontier Park and Conservation Area (straddling: Mozambique, South Africa and Zimbabwe, the Lower Zambezi and ZIMOZA Transboundary Initiative (straddling: Zimbabwe, Zambia and Mozambique) and the Upper Zambezi 'Four Corners' Transboundary Initiative (straddling: Namibia, Botswana, Zimbabwe and Zambia).

The author argues for collaborative partnerships in southern Africa between governments and communities to co-manage transboundary parks. He notes that communities will need support from governments to improve their capacity. He concludes that there is significant potential for co-management of transboundary parks in southern Africa, although appropriate management must be in place at the national level before regional cooperation can be effective.

Case study

11. Birner R and M Mappatoba (2003); Community Agreements for Conservation – Balancing Community and Conservation Interests in the Lore Lindu National Park in Central Sulawesi, Indonesia, *Policy Matters*, 12: 254-263.

This article explores the community arrangements for conservation established in Sulawesi. Efforts to establish such arrangements are underway in 40-60 villages bordering the Lore Lindu National Park in Indonesia. Three NGOs are involved: a local one, TNC and CARE. The authors conducted interviews in six villages around the Park in 2001 and 2002 to identify perceived benefits and losses due to the creation of the protected area. The sample included villages that were working with each of the three NGOs.

In terms of perceived benefits, the following, in order of importance, were noted: prevention of soil erosion, prevention of flooding, ensuring water supply, prevention of land slides, protection of wildlife for future generations, better air quality and protection of medicinal plants. Almost 80 per cent of the respondents also mentioned at least one problem, which included: land shortages for future generations, problems concerning community land rights inside the park, the continued supply of rattan – which is a major source of income – shortage of timber for house construction, restrictions on fire wood collection and restrictions on catching birds.

Community agreements for conservation in Lore Lindu appear to have tremendous potential for achieving both natural resource conservation and improving the livelihoods of local communities. The fact that the three organisations working in the area represent difference concerns (biodiversity, indigenous rights and human development) provides a good example of collaboration to achieve common biodiversity and livelihood objectives.

Case study

12. Chhetri, P, A Mugisha and S White, (2003); Community Resource Use in Kibale and Mt Elgon National Parks, Uganda, *PARKS*, 13:1, 28-38.

This paper looks at the opportunities created by new management approaches recently adopted in Kibale and Mt Elgon national parks.

The creation of the Mt Elgon and Kibale National Parks limited access to the forests and prohibited resource harvesting, leading to conflicts with local communities. However, since the mid-1990s the legal, policy and institutional framework for protected area management in Uganda has progressed to forge partnerships with local communities for the conservation of protected areas. For instance, the Wildlife Statute (1996) allows for local communities to harvest resources in protected areas and to be involved in the management of those areas. The Statute also makes provisions for sharing 20 per cent of national park entry receipts with local communities.

To reduce conflict and engage communities, the Uganda Wildlife Authority undertook combinations of the following:

- Allowed local communities to harvest and manage selected park resources through collaborative resource management arrangements;
- Developed and tested deterrents to keep wild animals from entering crop fields;
- Clearly delineated park boundaries and entered into agreements with neighbouring communities to utilise boundary trees in return for protection of the boundary;
- Reduced pressures on the protected areas by collaborating with district authorities and NGOs in promoting environmentally sustainable development outside the protected areas;
- Sensitised and raised awareness about the importance of conservation, with a particular emphasis on environmental education for school children.

The experience in Kibale and Mt Elgon has shown that local communities can take on the responsibility for protection and regulation of resource-use areas and that collaborative resource management does bring significant benefits to local people living around protected areas while improving local attitudes to conservation.

The authors conclude with the following lessons from the experience in Kibale and Mt Elgon:

- strategic partnerships with people neighbouring the parks, developed through collaborative resource management arrangements can help to reduce conflicts and improve the relationship between parks and people;
- partnerships with local district governments to promote environmentally-sustainable development outside the parks, help to reduce pressure on them;
- negative impacts of parks on local people, such as crop-raiding by wild animals, must be addressed through prevention or compensation; and
- revenue-sharing is a good mechanism for sharing park benefits with local people.

Case study

13. Troëng, S and C Drews (2004); *Money Talks: Economic Aspects of Marine Turtle Use and Conservation*, WWF-International, Gland, Switzerland.

The authors set out to analyse economic aspects of marine turtle use and conservation. They estimated gross revenue from consumptive use of marine turtle meat, eggs, shell, leather and bone at nine case study sites in developing countries and compared them with non-consumptive use. Direct beneficiaries from non-consumptive use range from ten tourism operators to 1,280 persons per case study.

The results of the study showed that non-consumptive use generates more revenue, has greater economic multiplying effects, greater potential for economic growth, creates more support for management and generates proportionally more jobs, social development and employment opportunities for women, than consumptive use. The authors conclude that since economic considerations underpin local decisions concerning marine turtle use in coastal communities of developing countries, conservation strategies to recover marine turtles must include tangible, local economic benefits. The nine detailed case studies are provided as an annex to the paper.

Case study

14. Namara, A (2006); *From Paternalism to Real Partnership with Local Communities? Experiences from Bwindi Impenetrable National Park (Uganda)*, *Africa Development*, 31: 2, 39–68.

This paper looks at progress in Uganda's wildlife management, with a particular focus on the Bwindi Impenetrable Forest National Park (BINP), from command and control to a more participatory approach since the 1999 Ugandan Wildlife policy. Three distinct phases can be identified in the management of Bwindi: the pre-gazetted era when people had unlimited access to forest resources, the forest reserve era when park boundaries emerged, and the national park era starting in 1991 and marked by stringent forest policing.

To address some of the concerns generated by BINP, a community conservation programme was implemented by the Ugandan Wildlife Authority (UWA) in partnership with other conservation organisations. In 1992 access was granted to some beekeepers on a trial basis. Since then, community institutions have been evolving to enlist community participation in the management of national parks.

The multiple use programme, as it is known around BINP, has been hailed for opening the way for regulated resource use by local communities and for granting communities access. Nonetheless, the needs of the Batwa (pygmies) as a group remain to be addressed. Batwas' needs from the park include fish from the rivers in BINP, wild yams, wild honey and access to ancestral sites. However, access to these resources is not

considered in the programme, mainly because UWA believes local people use unsustainable harvesting methods. As long as their needs are not addressed, they may continue to be tempted to access the resources illegally, with negative ecological impacts such as forest fires.

The paper concludes that in Uganda the natural resource management sector remains heavily centralised, with local people having very little power despite attempts to improve community participation. Thus it remains difficult for local people to develop a sense of ownership and responsibility over protected areas.

Case study

15. M'bete, R A (2003); *La Gestion Participative des Aires Protégées (faune et flore) en Afrique. Etude de Cas: La Gestion Participative du Sanctuaire de Gorilles de Lossi au Congo-Brazzaville*, Mémoire de fin d'études en vue de l'obtention du diplôme d'Etudes Spécialisées en Gestion des Ressources Animales et Végétales en Milieux Tropicaux, Faculté Universitaire des Sciences Agronomiques de Gembloux et de l'Université de Liège, Belgium

This dissertation looks at the participatory management of the Lossi Gorilla Sanctuary in Congo Brazzaville. The area covers 32,000 ha and is inhabited by 3,000 people. A number of beneficiaries also live in the two neighbouring towns of Mbomo and Kéllé.

To generate local revenue from the sanctuary, a tourism camp has been set up, a road built and a health centre created. Jobs have also been created and seventy five million CFA (about Euro 115,000) have been generated thanks to ecotourism activities. The sanctuary provides jobs in the following areas: research and monitoring, service contracts, management of tourism activities (visitor taxes, lodging and food), access to the district of Mbomo and surrounding villages. At the national level, filming rights provided 5,000,000 FCFA (Euro 7,622.45).

The sanctuary can only take in six visitors per day. As part of the ECOFAC project funded by the EU, each beneficiary family receives an annual amount of 30,000 FCFA (Euros 45.75). Should a beneficiary die, the family receives an additional 50,000 CFA (Euro 76.22). The local association AATL had total savings of 3,000,000 FCFA (Euro 4,500) in December 2001, obtained mainly from ecotourism revenue. The main objectives of the association are:

- protection and conservation of the Lossi gorillas;
- contribution to anti poaching;
- sensitisation of rural communities to the importance of gorilla tourism;
- promotion of tourism and community development;
- promotion of youth employment.

Thanks to direct financing from the AATL and material support from ECOFAC, a health centre was created and a health advisor recruited in the village of Lengui-lengui.

The paper concludes with a number of short, medium and long-term recommendations, including the need to set up a local natural resource management committee, participatory zoning and capacity building.

Case study

16. Haenn, N (2000); *Biodiversity is Diversity in Use: Community-Based Conservation in the Calakmul Biosphere Reserve*, Department of Anthropology, Arizona State University, USA

This paper describes community management of Calakmul Biosphere reserve in Mexico. It notes that the reserve director's most important decision was to focus his attention and resources *outside* the Reserve. In order to "encircle the Reserve socially," he oversaw a multi-disciplinary committee that mediated various interests in the region and lobbied government agencies. In order to carry out this vision, the director also

built a close relationship with the Xpujil Regional Council, a campesino organisation. He believed that a variety of projects were necessary to address the problem of illegal logging from different angles.

The Xpujil Regional Council's cornerstone project was the establishment of protected areas on village lands. The aim of these reserves was two-fold: on the one hand to make forest management compatible with farming and to create financial incentives for conservation while on the other to create a way for people to relate to the Calakmul Biosphere Reserve. In order to reduce conflict, a variety of government subsidies was offered to the campesinos in the early 1990s, including in the form of food and education. Overall conservation benefits at Calakmul were smaller than the costs of government subsidies. This case highlights how effective community-based conservation can entail difficult compromises for conservationists.

Case study

17. Raymundo, L J (2002); *Community-Based Coastal Resources Management of Apo Island, Negros Oriental, Philippines: History and Lessons Learned*, ICRAN, UNEP, Nairobi, Kenya.

This paper reviews the Apo island protected area management system. About 700 people live on the 75 ha Apo island, most of them fisherfolk. A comprehensive management plan for the island was developed in 1985 which formalised the "no-take" sanctuary and declared the entire reef to 500 m offshore, a marine reserve, allowing only traditional non-destructive fishing methods. Tourism, protection of fish habitat and a fishing ban for non residents were all promoted.

Today there are positive signs of better standards of living in the Apo community. Measurable evidence can be found in fish catch data. It was reported that fish yields of 19-25 t/km²/year have been maintained for the past two decades (1980-2001). Catch per unit effort for hook and line fishing has increased from a mean of 0.15 kg/man/hr in 1980-81 to 1-2 kg/man/hr in the period 1997-2001.

The author concludes that tourism has had a positive impact on the community; with estimates of US\$500/ha/yr in revenue for the reef. The implementation of the fee system has generated mean monthly revenues of US\$3,741. Seventy-five per cent of the revenue generated is to be fed back into the local community, but the way the system works, all funds first go into the national treasury and then back out to the community via specific development projects, which may take up to a year.

Case study

18. Goodwin, H J, I J Kent, K T Parker and M J Walpole (1997); *Tourism, Conservation and Sustainable Development Volume III, Komodo National Park, Indonesia, Final Report to the Department for International Development, University of Kent, UK.*

This report explores the contribution that tourism in Indonesia's Komodo National Park makes to local communities and to conservation.

Between 1983 and 1996 annual visitors to the park increased from 1,140 to 28,991. Nonetheless, visitor fees remained low and willingness to pay demonstrated that they could be raised. The park is situated in a poor part of Indonesia and a number of ethnic groups surround the park. Unfortunately because many tourists arrive and leave on the same day, the potential for them to contribute to the local economy is limited. The majority of contributions accrue to nearby towns rather than to the rural villages surrounding the park. Thus for example only 1 per cent of visitor spending was estimated to reach local villages.

The author cautions that the promotion of tourism in the park could make it vulnerable to fluctuations in the international market, and notes that there is still little linkage between the markets and the park.

Case study

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