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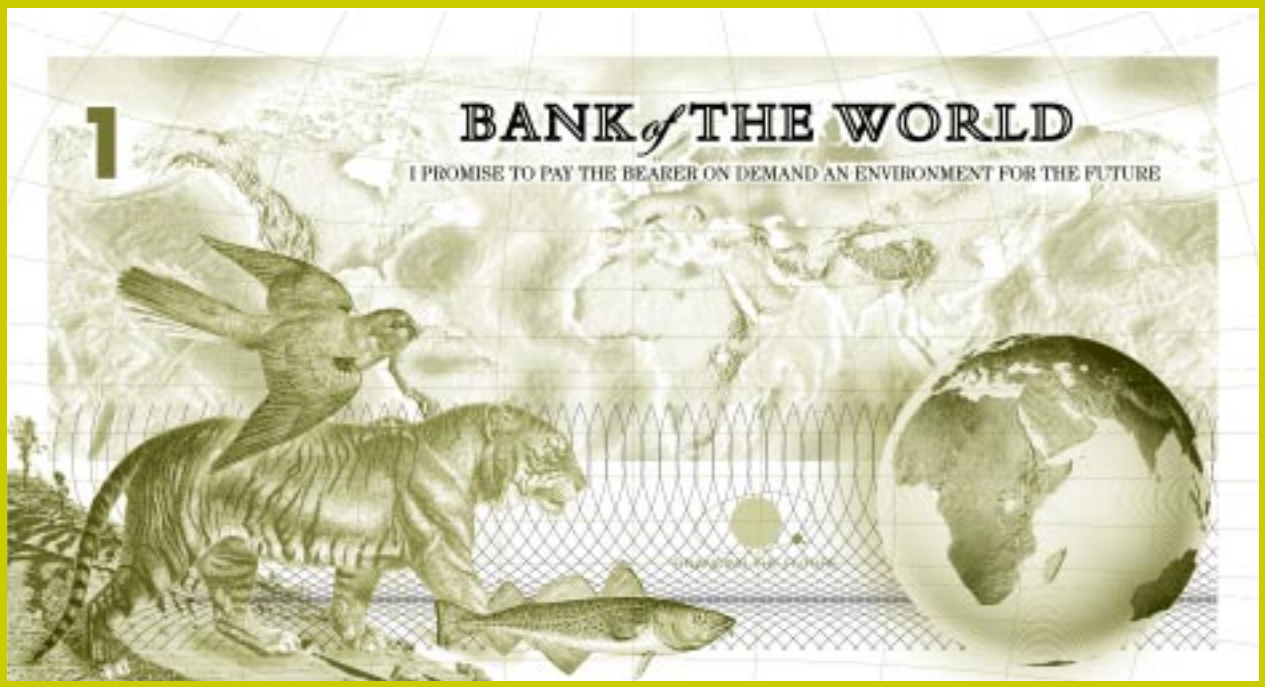

The Green Buck

Using economic tools to deliver conservation goals: a WWF field guide

The Green Buck

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Case studies illustrating the use of economic tools to deliver conservation goals.
For country and subject please refer to the contents list.

Contents

Foreword

Dr Jill Bowling, Director of Programmes, WWF-UK

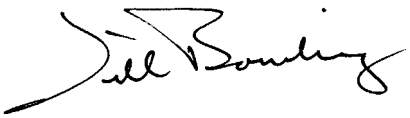
As the threats to our natural world become ever greater, so conservationists are obliged to seek more innovative and far-reaching approaches. Economic approaches, by firmly addressing the root causes of biodiversity loss, can offer promising solutions to intractable problems.

Conservation science increasingly teaches us that ecosystems cannot be conserved in protected areas alone. Instead, we must work on bigger scales, across whole landscapes and eco-regions. This means that we must actively engage with people and companies, we must understand what influences the choices that they make, and we must provide solutions that encourage them to conserve and protect ecosystems. At the same time, we must demonstrate how the sustainable use of ecosystems can benefit people, leading to poverty alleviation more effectively than alternative, environmentally destructive approaches.

The use of economics offers great potential in contributing towards the achievement of these goals. This guide demonstrates some of the ways in which WWF has developed economic approaches to the achievement of conservation success around the world, and some of the lessons that we have learned in the process.

Economic approaches can offer promising solutions to intractable problems.

I hope that it will stimulate us to develop new approaches and partnerships and to emulate these successes.



How can economics help me?

How can biodiversity-rich forests forests be conserved outside protected areas?

How can biodiversity-rich forests be conserved outside protected areas? What means can be used to persuade governments to increase protection of marine fisheries? And what actions are available to address the threats a major infrastructure poses to a region's freshwater habitats? These cases are amongst those that feature in this guide: in each one, WWF has successfully used economics to achieve conservation success.

Economics is increasingly being used by conservationists as they seek solutions on an ever broader scale. Economics can help us to understand the choices made by individuals, groups and societies, and how these are influenced by the incentives that people receive. It is these choices that ultimately drive the impacts on ecosystems in which conservationists are interested. Economics offers a range of approaches that can be used to seek to change these incentives that influence peoples' behaviour. Where these approaches are used successfully, the results can affect the fundamental causes of biodiversity loss, leading to conservation achievements on a significant scale.

This guide is intended to provide an introduction for the non-specialist to some of the approaches that economics can offer. Rather than being focused on economic theory, it demonstrates the ways in which economics can be used, illustrated by case-studies from around the WWF network where economics has contributed to conservation. Importantly, this guide is not intended to offer a complete overview of all the economic approaches available, only some of the most common. For example, there is no discussion of the growing field of tradable permits.

In order to make the approaches that economics offers available to the non-specialist, this guide is not categorised into sections determined by different aspects of economic theory. Instead, the guide is divided according to three of the main ends to which environmental economics can be put: generating increased finance for conservation; creating markets that support conservation; and influencing government plans and programmes that impact on biodiversity.

In addition to these uses of economics at the core of conservation programmes, economics has a vital role to play in the early, planning stages of conservation. Designing conservation programmes and interventions requires not only understanding the biodiversity processes that need to be conserved, but also the pressures that are leading to their degradation. Economics offers important insights into these pressures, and economics should be used to as part of an inter-disciplinary approach to planning and designing conservation programmes.

What actions are available to address the threats a major infrastructure poses to a region's freshwater habitats?

Economics can therefore be used in different ways at different stages of conservation programmes. Economic approaches can form the core of a conservation programme – as in the cases introduced in this guide. In addition, economic analysis should form part of the multi-disciplinary approach to planning conservation programmes.

Almost all of the case-studies in this guide have been drawn up in discussions with the WWF staff who were involved. They therefore condense many years of experience of attempts to apply economics to conservation. For each of the approaches discussed, a number of the key lessons that have been learned in WWF's use of these approaches are summarised. These lessons are often similar across different contexts and locations, and provide guidance on some of the important mistakes that can be avoided. The guide concludes with suggestions on the next steps for those interested in exploring these possibilities further.

Further information: biodiversityeconomics.org

Because this guide is intended to open up to the non-specialist some of the possibilities that economics can offer, it includes only a basic introduction to each approach, and does not attempt to provide technical economic guidance. Further, important areas where economics can contribute to conservation have not been included.

Key lessons from WWF's experience are condensed throughout this guide.

In addition to the references to more extended discussions provided in each section, WWF and IUCN have launched www.biodiversityeconomics.org Biodiversity Economics provides more extensive support and materials to the use of economics, including further introductory guides and more detailed, technical material.

Illegal logging, Indonesia. Economics offers insights into the processes driving biodiversity loss.

Financing conservation

Danaus plexippus (Monarch Butterfly). Payments per hectare of conserved forest are made from the Monarch Butterfly Conservation Fund to communities in Mexico where the butterflies overwinter.

Financing conservation

New ways of generating revenue for conservation have been developed in recent years.

A wide range of innovative mechanisms have been developed for financing conservation in recent years. These have attempted to access new sources of revenue for conservation – for example, from private sector companies through payments schemes, or treasury departments in debt for nature swaps. New financing mechanisms have also sought to evolve ways of spending revenue that lead to more targeted and efficient conservation gains, for example through payments to land managers or conservation auctions, as in the case from Australia discussed here.

Two of the most high profile approaches to financing conservation are discussed here: payments for environmental services, and access charges. However, other significant mechanisms for financing conservation have been developed, including carbon offset projects, conservation trust funds, resource extraction fees, user fees, and debt swaps.

Further information:

From good-will to payments for environmental services: A survey of financing alternatives for sustainable natural resource management in developing countries, ed. Pablo Gutman, Danida and WWF, August 2003.

Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development, ed. Stefano Pagiola, Earthscan Publications, 2002.

WWF-US Center for Conservation Finance:
www.worldwildlife.org/conservationfinance

The Conservation Finance Alliance:
www.conservationfinance.org

Payments for environmental services

Payments for environmental services (PES) schemes have received considerable attention as a new way of approaching conservation. PES schemes are based on the principle that biodiveresity provides a number of economically significant services: payments and funding should therefore be devoted to protecting biodiversity, thereby ensuring the continued provision of these services. The ecosystem services that have received the most attention are watershed protection and carbon sequestration. Other environmental services include the maintenance of biodiversity and landscape beauty.

PES should not be regarded as a single, rigid approach, but rather a group of related approaches that display one or both of two key characteristics. Firstly, those who are

responsible for ensuring the provision of ecosystem services should receive payments or compensation to encourage future provision of the ecosystem service. Secondly, those who benefit from the ecosystem services should provide the revenue for the payments. Where the collection of this revenue is linked to a fee on the use of the ecosystem service – for example a fee on water use – this can also create incentives for the more efficient use of resources.

'Pure' PES schemes contain both of these elements, as in the cases discussed here from Guatemala and Indonesia where industries with high water use are negotiating payments with local communities to manage forests in order to preserve water quality. However, while all PES schemes contain some element of payments to those who maintain environmental services, they do not all contain a reciprocal mechanism for generating those revenues *directly* from those who will benefit. In the example from Australia's Liverpool Plains introduced here, a mechanism was established for farmers to receive payments for undertaking conservation orientated land management. In this case, the funds came from central government revenue.

In the case of some PES schemes, payments can be made directly to individuals or businesses, again for example in the case from Australia. On other occasions, payments can be made to community groups or representative organisations of some form, as in the examples from Mexico and Guatemala.

The implementation of PES schemes will normally need to start with an analysis of the land-use practices that impact on ecosystem services: what is driving current practices, and how might the introduction of payments provide incentives to change these practices? At the same time, a valuation exercise is needed to establish the benefits from the preservation or improvement of the ecosystem service, as for example in the valuation carried out in Indonesia ahead of the establishment of a payment scheme for watershed protection. A valuation can be used to justify the introduction of a PES scheme and will indicate who might be approached to contribute finance towards any scheme.

There are a number of challenges to the implementation of PES schemes and these should not be underestimated. Firstly, there is typically a need for strong legal and institutional structures if PES schemes are to be successful, both to enforce revenue collection and to ensure compliance with the conditions of any payments. Secondly, the scientific processes that underlie the ecosystem services need to be understood. Sometimes this can be clear, but on other occasions, for example with hydrology, the biophysical processes underpinning ecosystem services can be complex and little understood.

In general PES schemes on smaller scales and/or with less groups involved can be less challenging than those on a wide scale with many actors. Similarly, schemes that try to link beneficiaries of an ecosystem with those responsible for its maintenance are more complex than those that seek simply to use payments as an innovative approach for utilising existing funds.

PES should be viewed as a range of flexible approaches.

KEY THINGS TO LOOK OUT FOR IN PES SCHEMES

1 Participation from the beginning is important
Simple though it may seem, involving as many groups as possible from the outset – including the assessment and valuation stages – has proved a key lesson learned across much of WWF's involvement with PES.

2 Monitoring mechanisms need to be considered
If PES schemes are to be successful, mechanisms need to be in place to monitor whether those who are receiving payments are complying with the required actions. This can be difficult and expensive.

A valuation study can justify a PES scheme and identify who might finance it.

3 Effective organisations for distributing revenue are required
Where the relevant maintenance and stewardship of environmental resources is conducted by many individuals, it may be impractical for a payment scheme to directly reward all individuals. Under these circumstances, some form of intermediary organisation such as a community group may be the most appropriate body to whom payments should be made. This is most likely in developing countries where land is more likely to be managed communally.

4 Equitable benefit sharing should be ensured
There is a danger that payments can be appropriated by more powerful members of the community.

Cloud forest, Eastern Andes Mountains, Ecuador. Biodiversity-rich montane cloud forests yield particularly valuable watershed services.

1 THE MONARCH BUTTERFLY CONSERVATION FUND

State of Mexico and Michoacán, Mexico

Category **Payment for environmental services**

Case-study by Jordi Honey Rosés

Application

Implementing an economic incentive scheme with local groups to create and conserve protected areas in rural Mexico.

Problem

Monarch butterflies migrate from Canada and the United States to a reduced number of pine and fir forested mountain tops in central Mexico to survive the winter months. Aerial photography has shown that the forest habitat of the monarch butterfly in Mexico is disappearing. Without a healthy forest cover, the migratory phenomenon of the monarch butterfly could become extinct. Furthermore the regional economy depends on tourism income brought by visitors who seek to view the butterfly colonies. Also, the water resources from this area supply several urban centers in Mexico including Mexico City.

The first protected area for the monarch butterflies was created in 1986, yet by 1999 evidence showed that deforestation had continued. In biological terms, the protected area boundaries were also found to be inadequate to protect the monarchs during the winter months. An evaluation determined that additional lands surrounding the 1986 boundaries needed to be set aside to ensure the survival of the monarch butterflies. Local rural communities (Ejidos or Indigenous Communities) owned logging rights in the forest areas proposed to be converted into a Biosphere Reserve. In the past, these communities resisted conservation initiatives because of the lost logging rights and income. Communities had argued for years that they had born the burden of forest protection (limiting their timber extraction) for a world renowned biological phenomenon and in exchange for nothing. Within this context, a mechanism was needed to provide an economic incentive or reward system for communities that succeeded in protecting their forest area once the new protected area was established.

Economic approach used to address the problem

Together with partner organisations and donors, WWF created the Monarch Butterfly Conservation Fund (MBCF). The MBCF uses economic incentives to complement the traditional conservation strategy of creating a protected area. The MBCF is a permanent capital fund of US$6.5 million that disburses the yearly interest gains. The MBCF pays US$18 per cubic metre of wood that the community ceded to cut inside the core zone of the new protected area. Additionally, each year permit holders are offered US$8 per hectare of conserved forest. Those without logging permits are offered US$12 per hectare.

The income loss of the communities as a result of the new reserve is accounted for through MBCF payments. The term *compensation* has been avoided since the value of the payment (US$18) is below the legal market value and compensation by definition implies equal exchange. It is, however, important to stress that the community is not legally permitted to cut or sell any timber inside the new core zone of the Reserve.

The MBCF only disburses funds to communities who succeed in conserving their forest and withholds payment from those communities who have shown forest degradation. In June 2003 one community did not receive payment due to the considerable loss in forest cover detected as a result of aerial photography.

How did the economic approach contribute to conservation

The MBCF succeeded in its main objective of gaining local support for the enlargement of the Monarch Butterfly Biosphere Reserve from 16,110 hectares to 56,259 hectares. Currently 31 of 38 Ejidos, Indigenous Communities or Private Properties are participating in the MBCF. As of June 2004 the MBCF had paid for the cancellation of 53,854 cubic metres in logging permits and is scheduled to pay for the cancellation of 136,031 cubic metres by 2010. In a sense, the MBCF has converted logging permits back into trees. It is possible that the real effect is larger than the official numbers, since for every cubic metre of wood legally authorized for extraction it is known that logging interests frequently steal additional cubic metres. Lastly, the MBCF payments per hectare of conserved forest have given a monetary value to standing trees for communities that previously did not have a direct economic incentive for maintaining a healthy forest.

Lessons learned

- Implementing conservation strategies based on economic incentives requires extensive and constant communication with the local participants about the program. Transparency is essential in the disbursement of funds and also helps encourage the community to invest the MBCF payments into local projects.

- Economic incentives, rewards or compensation alone are not sufficient to ensure conservation, especially if the government authorities are incapable of upholding the rule of law. Illegal logging by groups from outside of the rural communities has replaced legal logging previously authorized by the government and the community authorities. The illegal logging and timber theft has occurred mostly in the buffer zone where the MBCF does not offer payments. This suggests a case of "leakage" where the protection of the core zone has come at the expense of increased logging pressures in the buffer zone.

- A conservation strategy that uses economic incentives or payments for environmental services needs a forest monitoring system to determine which communities have succeeded in protecting their forest, and thus merit payment. There are few precedents for such forest monitoring systems and traditional sampling or remote sensing systems may leave considerable forest loss undetected. Creating and implementing a forest monitoring system for payment decisions is complex and costly.

Further information

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2 THE SIERRA DE LAS MINAS WATER FUND

Motagua-Polochic System, Guatemala

Category **Payments for environmental services**

Application Funds raised from the major users of water resources can be used to pay for upstream protection of the catchment.

Problem The Montagua-Polochic System, located along Guatemala's Atlantic Coast, is one of the most biodiverse regions within the Meso-American Biological Corridor. Among the protected areas located here is the 240,000 hectare Sierra de las Minas Biosphere Reserve (SMBR), considered the most precious jewel within Guatemala's Protected Areas System. Sixty-three permanent rivers originate in the dense cloud forest of the SMBR core zone and flow to low-lying river valleys. Water resources are essential to an enormous variety of stakeholders, including 500 resource-poor communities (approximately 4,000 people), two existing and 12 planned hydroelectric projects, numerous irrigation systems for cattle ranching, agro-industrial export operations (cantaloupe, watermelon, etc.) and coffee processing, and eight bottling companies, including Pepsi Cola, Coca Cola, and the beer and rum industries. Local water users have in recent years noted a fall in water quality and quantity, particularly during the dry season. Major upstream threats are deforestation, cattle ranching, forest fires and agricultural expansion. At the same time, there are no financial mechanisms in place to charge and channel user fees upstream to the managers of the SMBR or to compensate forest owners for the important environmental services they provide, and bottling companies, agro-industries and farmers do not pay for the water they extract.

Economic approach used to address the problem WWF and Defensores de la Naturaleza are addressing the problem by promoting sustainable resource use in and around SMBR via user payments for environmental services. The payments plan will initially target the users with the greatest financial capacity to pay, particularly bottling companies and a paper factory, and, later, agricultural and residential users. At the same time, the project emphasises in-kind contributions from poorer sectors of society.

For example, 99.5% of the raw materials used in the manufacture of paper is water. Factory managers are aware of the importance of water, which becomes even more obvious when the river dries up in the dry season, forcing the paper factory to switch off two or three of their machines.

The user payments will go into a water fund, which will be allocated to watershed protection, watershed restoration activities, and compensation to forest owners in the cloud forests in the Sierra de las Minas Biosphere Reserve watershed, thereby ensuring a more constant flow of water. The project will look at issues like: Who uses the water and how much do they use? How much water is available? What is the cost of using water? How will the funds for upstream management be obtained? How will the funds be distributed to appropriate activities?

The first phase of the project had a strong impact in encouraging the industrial sector to participate in the future water conservation activities. The project is now developing a business plan that describes the economic values of the water, financial management of the water fund, and the relationships between stakeholders. The impact will be measured through the commitment of the industrial water users in the Motagua/Polochic Valley being incorporated into the Collection Mechanism of the water fund/industrial sector.

How did the economic approach contribute to conservation

As the project is still underway, it is at the moment not possible to draw conclusions on how the water fund has contributed to conservation. However, it is expected that the concept "downstream users – upstream conservation" will contribute to landscape restoration and sustainable resource management of micro watersheds of the SMBR. It is intended to mitigate threats to this protected area stemming principally from deforestation, forest fires and agricultural expansion. At a broader level, beyond the protected area itself, the Fund is also expected to address water pollution problems affecting the Motagua and Polochic rivers and ultimately the Mesoamerican reef. Finally, this project will help generate social and economic benefits to local populations through employment generation and sustainable development.

Lessons learned

- To reach commitment for PES from all stakeholders is a long-term process, highly dependent on the social, economic and legal structures and organisations involved. For example, Guatemala has more than 13 ethnic groups, and these communities have local organisations, often formed by water-users. These groups need to be involved in the process.

- Understanding hydrological processes through a comprehensive hydrological database is a crucial tool for a PES mechanism. Most of the watersheds in Latin America lack this basic information, and the design of any new projects should include mechanisms for developing this understanding.

- Alliances with the private sector are based on a win-win approach in which the payment mechanism is also an incentive tool to reduce their costs and improve their performance and public image. PES must be presented and approached as a measure by which the private sector can increase its competitiveness, and not seen as another tax.

- A first step in the process needs to be an analysis of existing legal structures, to ensure that there is no duplication. Guatemala's new water law includes payment fees for uses at different levels, and it is important that the Water Fund is not seen as a double tax for the industrial sector.

Further information

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3 CONSERVATION AUCTIONS IN NEW SOUTH WALES

Liverpool Plains, NSW, Australia

Category **Payments for environmental services**

Application A conservation auction cheaply and efficiently identified key land-use changes and provided land-owners with the appropriate incentives to adapt management actions to improve salinity, biodiversity and water quality outcomes on a landscape scale.

Problem The Liverpool Plains catchment is an area of 1.2 million hectares, with significant agricultural production value estimated at AU$280 million (US$200 million), mostly through grazing, cereals, cotton and forestry. Associated with this activity, however, are large and increasing environmental problems. These include dryland salinity and groundwater recharge, soil erosion, water quality decline and loss of biodiversity. It was estimated in October 2000 that the value of lost production resulting from these problems was AU$23.5 million (US$17 million) which would increase at 15% per year unless action was taken. Solving the problem is difficult as it involves working with a very large number of landowners across a wide area and range of conditions.

Economic approach used to address the problem It was recognised that in order to address the problems of the Liverpool Plains catchment farming systems were required that better matched the local landscape. Research projects were undertaken, and together with landowner expertise these led to the development of the Liverpool Plains Catchment Investment Strategy (LPCIS). The strategy identified actions to address the natural resource problems, including altering cropping systems, maintaining optimum tree cover, managing ground cover and restoring floodways. The LPCIS identified 'land management units' which formed the basis for determining where on-ground works should be undertaken, and estimated that a total of AU$ 170million (US$ 120million) would ultimately be needed to meet all of the LPCIS objectives.

A significant challenge remained in implementing the LPCIS. How could the key interventions be identified without a prohibitively costly process of conducting a detailed survey of the whole catchment? And how could landowners be given the incentives to undertake the interventions? The approach taken was a 'conservation auction', in this case called a Land Management Tender – a mechanism for allocating funds in proportion to the environmental outcomes desired. The method was chosen as one of a suite of options to encourage landholders to make sustainable changes, along with environmental management systems and small grants. Funding was available under a Government Scheme (the Natural Heritage Trust), and other partners, including WWF Australia, brought funds and expertise in agreeing how best to achieve the desired outcomes. In all, AU$800,000 (US$560,000) was available to fund projects, and approximately AU$110,000 (US$77,000) was required to develop and implement the process.

The Land Management Tender (LMT) process brought together "Buyers" (funders desiring the environmental outcomes), and "Sellers" (the landholders able to provide outcomes at a price) in a market style process. The buyers specified the outcomes sought on the basis of the strategy, and developed an Environmental Benefits Index (EBI) to assess and rank the bids received. The EBI had separate components for salinity, biodiversity and water quality.

Landowners submitted bids to undertake works in line with the EBI. Points were awarded according to the location in the landscape, the nature of the activities to be undertaken and the likely benefits that would be received. Bids received higher points if the work was in a high priority location for addressing the problems, and if

the activity had technical merit in the context of a specific property. The total EBI was calculated by summing the salinity, biodiversity and water quality points, and dividing by the total amount bid. The higher the EBI the more likely the project was to be funded.

The conservation auction or tender mechanism is considered a refinement on traditional grant schemes in that it introduces an element of competition between landholders to ensure that costs of conservation are kept to a minimum, while still providing incentives for landholders to bid. In addition, a conservation auction collects information on the best interventions from those in the best position to know local conditions – the landowners themselves.

How did the economic approach contribute to conservation

The result of the trial over two years is that over 7000 hectares are now under contract for changes in management, and over 230km of fencing are to be put in place. Contracts were signed with 35 landholders to implement the works within the next 10 years. Payment will be provided to landholders on achievement of milestones specified in the contracts. The total money spent by the funders was AU$755,000, and it is expected that for every one dollar, a further three dollars will be spent by landholders. The outcomes are considered to be cost-effective, and there has been significant community interest in the process. Participants have suggested there is an incentive to take the auction more seriously than standard grant schemes as it encourages a business like approach to developing projects and seeking funds.

Lessons learned

- An auction style mechanism can be a cost-effective tool for engaging landholders and determining how to allocate funds to conservation actions and outcomes.
- The process requires well managed community engagement, and the information provided to landholders before, during and after the process is critical.
- The resources and skills to design and implement the auction can take time to develop appropriately, and there is significant learning over multiple auction rounds. Resources for longer term monitoring and managing contracts are needed up front.

Further information

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4 LOCAL WATERSHED PAYMENTS

Lombok Island, Indonesia

Category **Payment for environmental services**

Application Assessing the benefits from the protection of a watershed and the amount that the beneficiaries are willing to pay for its preservation allowed for a payment for environmental services scheme to be designed.

Problem The Rinjani forest is located in the North of Lombok Island, part of the Indonesian province of West Nusa Tengarra located to the East of the island of Bali. Rinjani's savanna, semi-deciduous, mountain evergreen and tropical evergreen forests hold the endangered Ebony Leaf monkey, and many of Nusa Tengarra's endemic bird, mammal, reptile and plant species. Nearly 3 million people depend on the Rinjani watersheds for their water supplies and many of the local Sasak people still depend on the forest resources for a significant part of their livelihoods.

The Rinjani forests have been under significant pressure over the last decade, and the Provincial Planning Board of West Nusa Tengarra reported in 2002 that approximately 30% of the Rinjani area had been deforested in the previous decade. The principle causes of this deforestation include the issuing of logging permits, and illegal logging and encroachment. The removal of the forest cover has impacted on the vital water supplies from Rinjani, leading to flooding, soil erosion, and unstable water supplies. For example, around 43% of the large springs surrounding the Rinjani forest have dried up during the last decade.

Economic approach used to address the problem An economic evaluation was performed by the Provincial Planning Board, Forestry Service Unit, Mataram University and WWF in order to evaluate the economic benefits of the Rinjani forests and to explore the possibilities of payment for environmental services schemes that could support forest management and reverse deforestation.

The valuation found that the watershed services of the Rinjani forest underpinned the US$50 million per year value of the irrigated agricultural sector in the Rinjani area and US$14 million per year for domestic water use. The forests also provided significant economic benefits in the form of the international tourist visitors and the provision of water to local industries. The valuation also assessed the willingness of residents of Lombok to pay to conserve the Rinjani forests. It found that local people favoured support for forest conservation through the payment of access charges to visit protected areas and additional payments placed on the value of products and services sourced from Rinjani, for example mineral water.

The findings of the valuation inspired the district governments in Lombok to develop regulations on environmental services. WWF has been working with local NGO Konsepsi and the local water supply company to establish a payment scheme in the Segara River basin in the north-east of the Rinjani Forest. 95% of the 43,000 households who receive water from the PDAM Mataram water company in Mataram City at the foot of the Segara River have agreed to a special payment of up to US$0.60 per month towards preservation of the watershed forests at the head of the Segara River.

The funds will be transferred to an independent body set up by WWF and partners with agreement from West Lombok District Council and Mataram Municipality. The independent body will be responsible for managing the fund to implement conservation and development projects with the communities in the Rinjani Forest at the head of the Segara River, with activities to include forest landscape restoration, social services and the provision of public facilities.

Remaining gragments of Lian trees, Lombok Island, Indonesia.

© WWF-Canon / Alain COMPOST

How did the economic approach contribute to conservation

The economic valuation played an important role in making the government of the West Nusa Tengarra province aware of the watershed and eco-tourist values of the Rinjani Forest. It encouraged a shift in policy away from logging of the forest towards support for the provision of environmental services. The valuation allowed for the identification of the groups who would be willing to pay towards watershed conservation, allowing for the design of mechanisms for increased income to be channelled into forest restoration, and the provision of alternative livelihoods for poor local communities.

Lessons learned

- The establishment of payment schemes takes time, preparation and partnerships. Without these, schemes can become a potential source of conflict, whereas a co-operative approach can reduce time and costs. Awareness raising of the scheme needs to be continuous and systematic.
- Combining economic valuation with campaign activities can be an effective tool to influence government policy.
- A broad spectrum of stakeholders should have a basic understanding of freshwater ecosystems.
- Effective monitoring and evaluation should be part of any payment for environmental services schemes; these help to re-design and change the process as necessary.

Further information

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Access charges

Access charges are a form of payment for environmental service and are based on the same principle: those who benefit from an ecosystem make payments towards the conservation and protection of the ecosystem. In the case of access charges, charges are levied directly on those who use or visit an ecosystem, often visitors to a protected area or region.

Charges are levied directly on those who use or visit an ecosystem.

Access charge schemes in themselves are not new, and entrance fees have been used to fund protected areas for some time. However, innovations have increased the potential of access charges. Firstly, access charges can be used outside formally designated protected areas, for example in the case from the Philippines included here. Secondly, revenues generated by access charges need not only be used to fund nature conservation bodies, but can also be returned to local communities to provide incentives to conserve biodiversity, as in the case here from Nepal.

The funds raised by access charges can therefore make two key contributions to conservation: they can be used directly for conservation purposes; and they can be used to generate socio-economic benefits for local communities, thereby providing communities with incentives to preserve biodiversity. If set at a sufficiently high level, charges can also be used to regulate the level of access to or use of an ecosystem.

In implementing an access charge, the first step is to estimate the level at which a fee should be set and the quantity of funds that can be generated. This is typically achieved through a willingness-to-pay survey of the users who it is envisaged will be charged. At the same time, an analysis can be made of any legal or policy changes that will be required to implement the fee, and any organisations or mechanisms which need to be established in order to collect and allocate revenue. The willingness-to-pay study can be used as a useful advocacy tool in persuading authorities and communities of the possibilities of such an approach.

Because access fees are charged directly for the use of the ecosystem that requires protection, access charge schemes can be more straight-forward to implement than more complex PES schemes such as carbon sequestration and watershed protection where beneficiaries can be far distant from the ecosystem that requires protection.

KEY THINGS TO LOOK OUT FOR IN ACCESS CHARGES

1 Transparent revenue allocation can avoid conflict

There is considerable potential for disagreement and conflict over the use of any revenues that are generated from an access charge scheme. The domination of any revenue allocation mechanisms by elite groups is a particular danger. As in all such situations, transparency and participation are integral to any approach.

2 Access charges can create over-dependence on insecure sources of income

While access charge fee schemes can generate revenues where little is available from government, excessive reliance on them can result in difficulties if the source of revenue dries up. This can most commonly happen where access charges are levied on tourists who are deterred from continuing to visit an area due to political instability or other concerns. Some of these problems can be avoided if reserves are set aside and maintained in the form of a trust fund.

3 Institutional capacity is required

Access charge schemes require some form of organisation to enforce collection and make allocations of any subsequent revenues.

Thalasseus bengalensis (Lesser-crested tern), Tubbataha Reef Marine Park, Philippines. Access fees have been collected to support the Marine Park for a number of years.

5 BATANGAS SCUBA DIVERS FUND

Mabini, Batangas, Philippines

Category **Access charges**

Application The creation of an access charge for scuba divers visiting coral reefs has provided a long-term, sustainable financing mechanism for marine biodiversity conservation.

Problem Located 80 km south of Metro Manila, Batangas is part of a coastal marine area of 226,000 hectares of coastal reefs among the most diverse in the world's 'Coral Triangle' (Philippines, Indonesia and Malaysia). The area is home to 319 coral species, of which 8 are rare, dolphins, turtles, and around 10,000 shorebirds that use the area during their northward and southward migrations. Unfortunately, this area is badly affected by pollution and unregulated human activity. For the past five years, NGOs have provided the majority of the marine conservation funding. However, the continuity of this funding is uncertain. In the case of WWF, financial grants have been provided by US aid agencies, but these were due to run out by the end of 2003. There was therefore an urgent need to find sustainable financing sources to maintain and further improve the status of marine biodiversity in the project site.

Economic approach used to address the problem The waters of the area have long been a destination for scuba divers and, with support from USAID, the WWF-Southeast Asia Policy Programme sought to implement a diver fee to contribute funds to marine conservation. The collection of a conservation fee from scuba divers is not uncommon, and many countries have adopted such a scheme. For example, the Tubbataha Reef National Marine Park in the Philippines has had a fee in place for some years now.

A variety of actions were taken to expand the use of such a system into the area. Firstly, it was necessary to know how much money could be raised. This was achieved through a survey of divers to determine how much they would be willing to pay for marine protection. In the summer of 2000, WWF surveyed more than 200 divers to determine their willingness-to-pay to have access to the dive sites in the study area covering two municipalities.

The survey suggested a fee of roughly PhP200 (US$3.60) per day for each of the two municipalities. As a result of further consultations, the fee was lowered to PhP50 (US$0.90) per day, although it is hoped this will reach PhP100/day (US$1.80). In October 2002, the Municipal Ordinance Conservation Fee was passed by the Sangguniang Bayan (Municipal Council) and subsequently received Batangas Provincial Council approval in March 2003.

The results of the study were initially presented to local and municipal officials and other stakeholders in the project site. The stakeholders included divers, resort owners, fishermen, local government officials and other NGOs who have so far expressed support for this initiative after concerted efforts to explain the benefits from the user-fee scheme. The local government conducted the consultations with support from WWF.

WWF also engaged the services of an environmental lawyer to assist the local governments of Mabini and Tingloy in drafting the municipal ordinances that will provide the legal basis for the collection of fees at the municipal level. Other activities carried out included education, information dissemination and communication with all the stakeholders involved. The project also made provisions for building the capacity of the local government and other local stakeholders in collecting, administering and using the funds. This made the process more transparent and acceptable to all.

How did the economic approach contribute to conservation?

The study and consultations have been successful in raising awareness within Local Government Units and divers as to the importance of protecting the marine environment. It has also highlighted the possibility of introducing innovative financing mechanisms to raise revenue for conservation. The local Government of Mabini, Batangas has successfully implemented the scuba divers fee by virtue of a Municipal Ordinance. To manage this required the creation of the Coastal Resource Management Board (CRMB), composed of eleven members from a multi-stakeholders group. The CRMB oversees the administrative and financial management of a conservation trust fund, which is used for coastal resource management activities in Mabini waters. The conservation fund has generated over US$1,820 since its launch on 22 September 2003.

Lessons learned

- Estimating people's willingness-to-pay to calculate the fee was necessary to convince the policy makers and the divers themselves of the need for and appropriate level of the fee.
- Local authorities were attracted to the project and maintained it as a high priority once they realised the potential of the fee to raise revenue as well as protect the marine environment
- Support from the local government must be secured at the outset to ensure acceptability from other stakeholder groups. The consultative approach has been important, and participation of civil society groups has been critical to the introduction of the fee and the promise of long-term success.
- Divers are willing to pay so long as they are sure that the funds raised will be used to conserve the marine environment. This highlights the importance of establishing a multi-stakeholder group to manage and distribute the collection of funds.

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Coral reef, Philppines. A willingness-to-pay survey of visiting divers was carried out

6 ANNAPURNA CONSERVATION AREA

Nepal

Category Access charges

Application Revenues generated through a permit fee charged to visiting trekkers are used to establish and maintain the Annapurna Conservation Area and to increase the revenues supporting the livelihoods of local communities.

Problem The Annapurna Region in Western Nepal is a spectacular mountain landscape that holds endangered wildlife species such as the Snow Leopard, Tibetan Argali, and Musk Deer. It also contains 1,226 species of flowering plants, 38 species of orchids, 101 species of mammal, over 450 species of bird, and is the home to three major river catchments and 120,000 people from diverse ethnic backgrounds. The natural beauty of the area means that it is the most popular trekking destination in Nepal, drawing 60% of the country's trekkers. In some years the number of trekkers and accompanying staff can equal the total population of the area. By the mid-1980s it was becoming recognised that the pressure from visitors was leading to significant environmental damage.

While the trekking industry provided benefits for some of the very poor communities living in the area – the majority living at the subsistence level – there were concerns that many of the local community were actually suffering at the expense of the visitors, for example through increased waste and higher prices. There were also significant concerns among local people over the establishment of any kind of formal protected area that would restrict their use of local natural resources and threaten aspects of their traditional livelihoods.

Economic approach used to address the problem The Annapurna Conservation Area Project (ACAP), founded in 1986, is managed by the King Mahendra Trust for Nature Conservation, and was the first protected area in Nepal to be managed by an NGO. Underlying the ACAP approach is the trekking permit which visiting trekkers to the area are required to pay. It was envisaged that the proceeds from the permits were to be used to maintain the Conservation Area while providing support to conservation and development projects.

From an initial entry fee of Nepal Rs200 in 1986, the fee has been raised to a current level of Rs2,000 (US$25). The proceeds from the trekking permits have provided considerable revenue for the ACAP. The total revenue collected from the trekking permits has risen sharply from Rs7.3 million in 1989/90 to over Rs67 million (US$1 million) in 1999/00. While donor support was responsible for the bulk of funding of the ACAP in the early years of establishment, the revenue generated by the trekking permit and other fees was able to contribute approximately 70% of the costs of the ACAP by 2000. There has been little cost to the government throughout the project.

Land-use within the ACA is zoned, and includes a wilderness zone, protected forest zone, an intensive use zone, and special use zones. Communal ownership of tourism is encouraged to ensure that income is spread throughout the community. Revenues raised through this approach come primarily from campsite fees and lodge income, with 15% percent of revenue used for nature conservation activities, 35% for maintenance and repair of tourism facilities, and the remaining 50% used to support community development.

Development activities are funded through the trekking permit and are determined by Conservation Area Management Committees (CAMC), elected by members of the community they represent. Activities have included tourism management and agricultural development programmes, and health, education and cultural heritage

projects. Conservation activities are encouraged through the Conservation Education and Extension Programme. A considerable focus has been on reforestation programmes and measures to reduce wood-use in an area in which 90% of local energy needs are met from forest resources. Management activities include forest zoning, establishing forest nurseries and planting seedlings.

How did the economic approach contribute to conservation?

The Annapurna Conservation Area has now expanded to cover 7,629km^2, some 5.8% of the total area of Nepal. The use of the trekking fee has allowed for the establishment and maintenance of the largest protected area in Nepal without drawing on hard-pressed government financial resources, while the promotion of tourism that also benefits local communities strengthens the linkages between economic development and biodiversity protection. As well as allowing for planned development of tourism and its impacts, spending on conservation projects has included the establishment of 30 plant nurseries and 50,000 community plantation sites.

Lessons learned

- Entry fees were capable of financing the majority of the area's management budget. However, there is a need for timely review of the entry fee.
- Once the community realises that the protection of park resources is beneficial to their livelihoods, they will invest their resources back into the park management, thereby cutting the overhead cost of park authorities.
- Legal recognition is required of the ability of the park authority to raise funds and allocate it back to park management; similar recognition is needed of community involvement.

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Creating markets that support conservation

Creating markets that support conservation

Creating markets that support conservation involves ensuring that the returns to ecologically sound economic activity are increased when compared to the returns to unsustainable activity. While PES schemes seek to create direct incentives for ecologically sound practice through financial payments, market-based approaches seek to utilise markets to achieve the same end – rewarding ecologically sound activity.

Reversing biodiversity loss requires rewarding sustainable economic activity.

There is an increasing realisation that reversing biodiversity loss can only be achieved through the search for large scale solutions. Protected areas and payments schemes to create conservation incentives make important contributions. However, more widespread change can be achieved if the underlying structures that determine resource use decisions can be influenced, and these decisions are mediated through markets. Markets are never free: they always take place in the context of a range of laws, institutions, and information flows that determine the outcomes of those markets. Influencing these 'rules of the game' can lead to markets that support conservation, rather than markets that encourage people to act unsustainably.

Precisely this approach has been adopted in each of the four examples here. In Namibia, granting communities legal rights to benefit from wildlife has allowed them to profit from the use of that wildlife and thereby seek to ensure its continued existence; in Papua New Guinea, increasing the benefits to communities from the use of Eaglewood provided an alternative approach to logging of forests; in Kenya, the certification of farm-grown wood sought to increase the competitiveness of carvings from these sustainable sources when compared to the use of hardwoods from threatened biodiversity-rich forests; and in the Philippines, a scheme for sustainable utilisation of turtle eggs provided incentives for the protection of the species. In each case, changes to the structures of the markets in which people operate has resulted in increased returns to environmentally sound activity.

Utilising markets in this way has a number of advantages over more direct interventions. If successful, widespread change can be achieved. Working with the grain of markets and making them work for conservation can be cheaper than trying to work against markets through enforcing laws or providing payments.

At the same time, there are very considerable challenges to such approaches – they are not easy. Markets are very complex and outcomes can be difficult to predict. Interventions need to be based on good information and robust analysis. The problems that arose from a mistaken intervention in the Philippines illustrate the difficulties only too well, and there are legion examples from WWF and beyond of failed attempts to adopt these approaches.

No simple 'recipe-book' guidance can be provided for implementing such approaches: as the examples demonstrate, each case is different. Nevertheless, the key first step is to develop a strong understanding of the structure and determinants of current markets. A focus can be made on how the benefits from a sustainable approach to resource use can be increased, or what factors are currently preventing them from increasing.

Certain key issues emerge repeatedly. Communities and individuals often do not have the legal rights to utilise certain environmental products in a sustainable fashion, and legal rights may need to be changed – as in the Namibian or the Philippine cases here. Alternatively, there may be problems with access to markets or a lack of information about prevailing prices. A number of WWF programmes are promoting an approach similar to that discussed here in PNG whereby information is provided about current market prices, thereby increasing the returns to communities from the use of natural resources.

A strong understanding of the structure and determinants of current markets is required.

Further information

Making markets work for forest communities, Sara Scherr, Andy White and David Kaimowitz, Forest Trends, 2002

Alex OBN

Good Woods tree cultivation has eased pressure on local forests.

KEY THINGS TO LOOK OUT FOR IN CREATING MARKETS THAT SUPPORT CONSERVATION

1 Partners with different skills are vital

Conservation approaches through markets require a whole range of skills, including business and enterprise skills, to understand and develop opportunities. On-going economic input is also typically required. Conservation organisations such as WWF often do not have these skills, and other partners with these skills must be included in a project. Bringing in partners with this expertise at the outset can be important, while bringing them in too late can lead to missed opportunities or unintended outcomes.

2 Management of exploitation rates is often necessary

Increasing the access rights to and benefits from utilisation of an ecosystem or species can result in that species being over-exploited even more rapidly than before, precisely the opposite of what a programme is designed to achieve. This issue is particularly pressing where consumptive use of natural resources is proposed, such as Eaglewood harvesting, rather than non-consumptive use such as Namibian wildlife-based tourism. Quotas or restrictions of some form may be necessary as an accompaniment to initial stages of increased market access to prevent rapid over-exploitation. These must be accompanied by effective enforcement measures.

3 A detailed understanding of local markets is an essential pre-requisite

This can often require investing in people with the skills to conduct an appropriate analysis. In the absence of a strong understanding, significant effort can be expended fruitlessly. One approach that has been adopted successfully in a number of WWF programmes has been through the use of a PhD or Masters thesis as a means of conducting the preliminary research. This can be a cost-efficient way of conducting the detailed and extensive research that is required.

4 Work can be required at many levels

Creating markets that support conservation may require interventions at a number of levels, from working with local market access to changes to national legislation or policy.

7 COMMUNAL AREA CONSERVANCIES

Northern Namibia

Category **Creating markets that support conservation**

Application Changing the rights over ownership and use of wildlife provides communities with incentives to conserve that wildlife.

Problem The 1967 Nature Conservation Ordinance gave private landowners in Namibia the custodial rights to manage and use wildlife. This legislative change led to a massive increase in the numbers of wildlife on freehold farms: between 1972 and 1992, for example, there was an 80% increase in combined wildlife numbers on freehold land. However, this trend contrasted sharply with the continuing overall decline in wildlife numbers in communal areas, where local people were not permitted to utilise wildlife for economic benefit. By the 1980s, these tenure systems combined with war, serious drought and poaching resulted in significant depletion of the wildlife populations on the state-owned, communal lands of Namibia.

Economic approach used to address the problem

Following independence in 1990, Namibia's government sought to address the inequities between private and communal land owners over the rights to the use of wildlife. A series of socio-economic studies were commissioned aimed at working more closely with communities to manage and benefit from wildlife resources. These led to the 1996 Amended Nature Conservation Act. The Act provided for circumstances under which people living in communal areas could establish conservancies – areas in which they were entitled to utilise wildlife and receive the economic benefits from it.

Conservancies are multiple use areas zoned by their members for farming, wildlife, tourism and any other desired sustainable development activities, and are run by a committee elected by the members of the community. They are given the power to use, manage and benefit from wildlife; propose recommendations for quotas for wildlife utilisation and decide on the form of utilisation; enter into agreements with private companies; and establish tourism facilities within the conservancy boundaries. The benefits from a conservancy are then distributed among members of the conservancy.

Even though the 1996 Act put the legislative framework in place, considerable work has been required in building capacity and providing support to communities to establish conservancies. WWF has been a major donor and partner to local NGOs in facilitating communities to establish these conservancies. By early 2004, 31 communal area conservancies had been gazetted, covering 74,000 km^2 – 9% of Namibia's land area – with over 40,000 members. A further 30 conservancies are in the process of establishment.

Conservancy income has increased steadily, with a dramatic increase in recent years. In 2000 the estimated total income for conservancies was just under N$3.5 million (US$400,000). Recent estimates suggest a four-fold increase in income generated over the last three years, to N$14.5 million in 2003. Of this, N$7 million accrued to conservancy committees, with the remainder accounted for as income to individuals through wages and other sources. Approximately 50% of conservancies are currently earning an income, ranging from just over N$65,000 to N$900,000 (US$7,000–100,000).

Nationally, the bulk of incomes earned come from community-based tourism enterprises (for example campsites), and during 2003 these accounted for 36% of all conservancy income. The next most significant activities are joint venture

tourism and trophy hunting. Hunting is particularly important in Caprivi, where the majority of income has come from two concessions. The total number of employees recorded across all conservancies enterprises for 2003 was 542 full-time jobs and 2,933 part-time employees. However, some of the most significant benefits from the establishment of conservancies have proved at this stage to be non-economic, including local control over wildlife, social empowerment, and the development of local institutions and capacity that deal with political issues and inequities.

How did the economic approach contribute to conservation?

The change in ownership rights over wildlife introduced by the 1996 Act resulted in a situation in which local communities had the incentives to conserve the wildlife on which the new economic opportunities depend. This already appears to have had a significant impact on wildlife numbers in conservancy areas. Annual game censuses of Namibia's existing and emerging conservancies have found impressive increases in wildlife numbers, including black rhino, elephant, plains game, and predators. Improved management, reduced poaching and reduced conflict between humans and wildlife as a result of the conservancies have been major factors in this increase.

Lessons learned

- The projects took far longer to establish than had been anticipated, partly because things were simply not accomplished in the original time-frames. Furthermore, WWF and its partner NGOs had intended to withdraw from conservancies when they became financially self-sufficient. However, it has proved necessary to provide some on-going technical expertise in some areas. Despite this, some communities have already proved capable of conducting challenging administrative skills.

- With increasing wildlife numbers, conflict between wildlife and humans has proved to be a very real problem. Stock losses due to the presence of predators, damage to gardens, and threats to human life from the presence of elephants are the most significant of these trade-offs. A challenge facing conservancies is to balance individual farmer's losses against conservancy gains. Attempts to address this have focused on efforts to manage and mitigate conflict, as well as the establishment of a pilot compensation scheme managed by communities from which funds can be paid to those affected.

- It has proved necessary to work directly with communities themselves as well as conservancy committees in order to transfer knowledge and manage expectations of what is reasonable of both the committee and the conservancy. This was best achieved when project staff are living with and are from communities. At the same time, it is important not to allow committees to take control away from communities.

- It is important for the government to remain a supportive partner of the programme.

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8 EAGLEWOOD MANAGEMENT AREAS

Papua New Guinea

Category **Creating markets that support conservation**

Application By understanding the structure of the market for Eaglewood, it has been possible to take steps to increase the revenue for the management of the forest resource and contribute towards the livelihoods of the local people.

Problem New Guinea contains the most extensive remaining intact stretch of tropical forest in the Asia-Pacific Region, the home to as many as 20,000 species of plants, at least 60 percent of which are found only in these forests, and over 700 bird species including the spectacular birds of paradise. Fifty-six mammal species – including Doria's and Goodfellow's tree kangaroos and the Papuan forest wallaby – live only in these forests. However, commercial logging has devastated many areas of the New Guinea forests.

Among the products found in the forests of New Guinea is Eaglewood (also known as gaharu, agarwood, or aloeswood), a resinous, fragrant wood product thought to result from a response of particular species of tree in the family *Thymeleaceae* to damage. Eaglewood has been traded for at least 2,000 years for its aromatic properties and its use in traditional medicine and religious and cultural ceremonies. As supply from traditional producer states – such as India and Vietnam – has decreased as resources have become depleted, international prices have gone up. This has sparked interest in new sources of supply, in particular the newly discovered resource in Papua New Guinea (PNG). As a result of these trends, the harvesting and export of Eaglewood from PNG increased sharply from 1997, in particular from the Sandaun and East Sepik provinces. There are serious concerns that this rapid increase may lead to the over-exploitation and depletion of the tree species from which Eaglewood is drawn, threatening the underlying resource on which the trade is based.

Economic approach used to address the problem In order to understand and address the driving causes of over-exploitation of Eaglewood, TRAFFIC Oceania conducted an analysis of the market structure of the Eaglewood trade in PNG with financial and technical support from WWF South Pacific. Conducted by a researcher from the Economics Faculty of the University of New South Wales, central questions of this study asked what the determinants of the structure of the trade are? Who benefits from the trade? And in what ways could this be altered to ensure the sustainability of the Eaglewood trees while maximising the benefits to local people?

The analysis came to a number of key conclusions. Firstly, it revealed that the poor local landowners from the remote areas involved received an annual income of between 1,000 and 3,000 Kina (PGK) per household from the harvesting of Eaglewood, equivalent to US$300-1,000. This represented a considerable increase on an income of only PGK50-600 per household prior to the establishment of the trade. This not only demonstrated the economic significance of Eaglewood. It also proved that Eaglewood could have potential as a cash crop, offering an alternative to less sustainable forest exploitation.

Secondly, the analysis revealed that the local people were receiving only a fraction of the economic value, or rent, from the Eaglewood they were selling, with the majority of the benefits going to the middlemen who traded, and the companies who exported, the wood. This was in large part because local people lacked information on the quality and value of the Eaglewood they were selling, a lack of knowledge exploited by middlemen and traders. Other factors included the absence of

competition among the Eaglewood exporters and the lack of access of local communities to lucrative international markets.

Thirdly, the analysis found that the flat export levy of 10% imposed by the government on all Eaglewood exports from PNG meant that a large share of the tax was raised on small quantities of high-quality Eaglewood. This encouraged the smuggling and under-grading of exports, increasing the rate of harvest and leading to reduced prices paid to local communities.

How did the economic approachcon tribute to conservation?

The analysis has shown clearly that the government of PNG is losing considerable revenue from the valuable export of eaglewood. This will be used by WWF and TRAFFIC to advocate for a revision of the royalty system, an increase in customs surveillance, and an improvement in the mechanisms for holding and using royalty funds to help with industry growth.

The demonstration of the value of the Eaglewood trade and the need to protect the sources of wood on which it is based made an important contribution to TRAFFIC and WWF's successful efforts to persuade the government of PNG to establish five trial Eaglewood Management Areas in the forests of PNG. The Management Areas are believed to be the first in the Pacific to have been set up to manage a forest product other than timber.

A vital part of the Management Area schemes are training programmes for the local communities in valuing the Eaglewood which they harvest. These have been accompanied by publicity campaigns run by the PNG Forest Authority, AICAR and WWF. The training schemes are designed to address the causes of the inequitable distribution of benefits identified by the market analysis, and have already played an important role in ensuring that local people receive a greater income from the Eaglewood that they harvest. This has generated increased local support for the establishment of sustainable management approaches.

Lessons learned

- The power of understanding the structures and determinants of the markets for Eaglewood has become very obvious as the process has progressed. In particular, the ability to address the excess rents being extracted by the middle-men and traders and ensure that this money has gone to local livelihoods and conservation has proved crucial to success. Further research on the international markets for Eaglewood is now being undertaken.

- The Eaglewood project has been conducted by a group of organisations working together, including WWF, TRAFFIC, the PNG Forest Research Institute, CSIRO and others. The team approach to working and learning together has been vital.

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9 THE GOOD WOODS PROJECT

Kenya

Category **Creating markets that support conservation**

Application Encouraging the use of sustainably produced goods requires an understanding of the markets in which they will be sold.

Problem The East African coastal forests have been acknowledged as among the most important areas for biodiversity globally, and contain around 1,750 endemic species. The forests also support significant livelihoods, including providing material for Kenya's wood-carving industry which contributes US$20 million per year to Kenya's foreign exchange earnings and directly employs up to 60,000 wood carvers, supporting 350,000 dependants. Historically, this industry relied heavily on indigenous hardwoods, particularly two species, Mpingo or African black wood *(Dalbergia melanoxylon)* and Muhuhu or 'Mahogany' *(Brachylaena huillensis)*. However, the exploitation of these species for wood-carving and other timber uses has significantly depleted the populations of hardwood species, leading to forest degradation and a significant threat to the livelihoods of the members of the carving industry due to unavailable wood supply. With demand for wood higher than could be satisfied by Kenya's forests, wood was sourced from hardwoods smuggled from Tanzania.

Economic approach used to address the problem To reduce pressure on endangered hardwood species and secure future wood supplies for the carving industry, WWF and partners in the region are leading a shift towards the use of fast-growing relatively soft woods including Mango *(Mangifera indica L.)*, Jacaranda *(Jacaranda mimosifolia)* and – particularly – Neem *(Azadirachta indica)* wood.

In order to encourage this shift, ways have been sought to make carvings from 'Good Woods' economically attractive in the increasingly competitive global carving market. Forest certification through FSC was considered the best option, as it was hoped that FSC certification would command a price premium. There has also been an increasing emphasis on the use of certification as a means of securing the supply of 'Good Woods', thereby avoiding a shortage of supply similar to that which occurred with indigenous woods. FSC certification was granted in early 2005, and although certification has not lead to an increased price for the carvings it has enabled 'Good Woods' carvings to increase market share.

In order to affect the switch to Good Woods, it is necessary to make the FSC approach economically attractive not only to the carvers but also to the farmers from whose land the trees are sourced. The Good Woods project has given support for collective production and marketing of timber from farms with Good Woods to the carving trade. However, this income alone was not sufficient to encourage farmers to cultivate neem in a sustainable fashion, and the project identified other neem by-products that could be generated. More incentives are now provided to local farmers through the training work undertaken by the project to promote these non-traditional uses based on neem oil and seeds.

For the carvers to enjoy the greater market share that FSC certification makes possible, significant improvements in both product quality and marketing were required. The project has worked extensively with the carving co-operatives to develop treating and drying methods to ensure that the new woods do not crack and are of good quality. A marketing company, the Coastal Tree Products Company, has been formed as an ethical joint venture between farmers, carver co-operatives and the project sponsors, with local business and marketing support. The Company will not only help to streamline the certification process, but will be responsible for

marketing and promoting the products, ensuring the best returns for the carving co-operatives from the switch to FSC wood.

How did the economic approach contribute to conservation?

The project has played a significant role in raising the profile of the alternative Good Woods in the Kenyan carving community, as well as promoting the cultivation of neem wood by coastal farmers. The training work conducted with farmers has enhanced the income available from the cultivation of neem, and as a consequence the tree is now seen as a money-maker which every household wants to have in their compound. Every Good Woods tree utilised means lower demand for illegally harvested Kenyan hardwoods or smuggled Tanzanian hardwoods.

Lessons learned

- Conservation as a project goal is meaningless to the local communities until the project outputs are expressed in terms that are meaningful and relevant to their livelihoods. Conservation can be a cost to the farmers and carvers but when economic benefits are incorporated into a project, the ideas are quickly adopted.

- Understanding the interests of all of the groups involved is vital. For example, the importance of developing neem by-products in order to secure a substantial early return for farmers was perhaps not realised soon enough.

- Working with partners experienced in different areas is important to achieve all the project goals, including conservation and livelihood development. For example, the use of business development and quality assurance specialists has proved vital. Each player is then left to do what they are good at, whether that be carving, marketing or tree management.

- It is important to include in the project local people who understand the culture and approaches of the groups who will be involved.

- Making markets work for small producers required changing the FSC certification process.

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10 THE 60/40 SCHEME FOR TURTLE EGG USE

Sulu Sea, Philippines

Category **Creating markets that support conservation**

Application Regulation that interfered with established access rights resulted in negative conservation outcomes.

Problem The Turtle Islands in the Sulu Sea on the Southern edge of the Philippine archipelago are an internationally important centre for the conservation of the endangered green sea turtle. The populations on the Turtle Islands are part of the once abundant populations of sea turtles in South East Asia that have declined between 65% and 90% in different parts of the region over the last 75 years. On Taganak, the main island in the Turtle Islands, turtle egg production declined by 84% between 1951 and 1983. The principle causes of the decline in populations of turtles on the Turtle Islands are over-harvesting for the sale of eggs, destructive fishing practices such as dynamite and cyanide fishing, and the development of the foreshore and beaches on which the turtles lay
their eggs.

Economic approach used to address the problem In 1979 the Government of the Philippines established the Pawikan (sea-turtle) Conservation Project (PCP) to protect the future of the species as an ecological rather than an economic resource. However, while the government established Baguan, one of the Turtle Islands, as a breeding sanctuary, it also recognised the need on the remaining islands to manage egg harvests while meeting the economic needs of local people. In 1982, after a series of community consultations, the 60/40 scheme was established.

The 60/40 scheme introduced a licensing scheme for the collection of turtle eggs. Licenses were raffled to applicants every November, with only local residents permitted to apply. Under the scheme, 60 out of every 100 eggs collected were allowed to be retained by the permit holder, while the remaining 40 were devoted to conservation. Of these, 30 were utilised by the PCP in their turtle hatchery and the remainder were sold with the proceeds going to the Marine Turtle Foundation.

Local people typically sold their permit to groups specialised in egg collection, who then returned 40% of the eggs to the PCP with the rest being sold to middlemen. Permits fetched the highest price – around US$350 – on Lihiman Island. Turtle egg collection in the Philippines has never been a permanent source of income, but in a poor community the sale of a permit provided a much-needed windfall that could allow people to buy a boat, construct a house, or send children to school. From 1998 to 2003, turtle egg collection provided between 16% and 23% of average household income to between 11% and 35% of households.

Despite 20 years of success, a chaotic reversal of fortunes on the Turtle Islands followed the instruction from government to transfer permit ownership from the locally-based PCP to the Protected Area Management Board of the national Department of Environment and Natural Resources. This resulted in a new list of applicants being drawn up that favoured the residents of Taganak over the residents of the other Turtle Islands. While this situation was being resolved in the face of the threat of violent protest, the passing of the Wildlife Act by the Philippines Congress in 2001 prohibited the harvest of wildlife, making the 60/40 scheme illegal.

In order to resolve the confusion, the municipal government intervened in 2002, moving to issue permits itself. However, the municipal authorities have no legal authority to issue permits, and under the 2001 Wildlife Act the PCP are not legally

allowed to receive eggs from the scheme for the hatchery, resulting in no eggs being hatched. Permits are allocated by the municipal authorities on a political basis, and the situation is starting to revert to that prior to the establishment of the 60/40 scheme, with consequent threats to the turtle populations.

WWF-Philippines has been working with the PCP since 1997, and lobbied in favour of a gradual phase-out of egg collection rather than the immediate ban introduced by the 2001 law. WWF are attempting to negotiate a manageable solution to the situation in the Turtle Islands, including pushing for government support for alternative livelihoods on the Islands in the case of a total ban.

How did the economic approach contribute to conservation?

By granting regulated rights to benefit from the turtle eggs, the 60/40 scheme allowed local people to be involved in turtle egg management for the first time. The PCP employed local people as wardens, creating regular jobs, and the permits provided important benefits to local communities. Although there continued to be some poaching of turtle eggs while the scheme was operational, the 60/40 system proved an effective collaborative management approach that both benefited local people and the populations of turtles. Although intended to benefit wildlife nationally, the introduction of the Wildlife Act in 2001 has threatened to undermine this situation.

Lessons learned

- National policies that frame the rights of local groups to utilise and benefit from natural resources can have a critical impact on conservation outcomes, both supporting and undermining successful approaches to wildlife management.

- Collaborative management is an on-going process of negotiation. It is vital to engage local stakeholders in decision-making and policy-making. Consultations alone are not enough; local stakeholders also need representation in decision-making bodies.

- The centralised structure of the national Department of Environment and Natural Resources created difficulty in implementing conservation programmes in the Turtle Islands, 1,000km away from the base of operations of national government. The remoteness of the area made it extremely difficult for national government to monitor and implement management.

Further information

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Amphiprion (Anemonefish), Fiji. Strategic environmental assessment of Fiji's Tourist Development Plan assisted increased community benefits while serious environmental degradation was avoided.

Influencing policies and plans

Influencing policies and plans

In deciding on policies, plans and projects, governments weigh up the advantages and disadvantages of different options using a variety of tools, typically couched in terms of the potential economic benefits of alternative options. However, environmental values, constraints and impacts are often neglected in these analyses. There is therefore an important role for economics to play in ensuring that these environmental aspects are considered in decision-making and economic analysis.

It is important to consider the decision that the economic analysis is intended to influence.

In using economic analysis in this way, it is important to keep in mind that the end purpose of the analysis is usually to influence a decision. In designing any analysis, it is therefore important to start with the decision that the advocacy is intended to influence, and then consider what information will help to influence that decision. Basic advocacy tools should be used in conjunction with the analysis. The quality of communications can be as important as the quality of the analysis, and this should be planned from the outset.

Further Information

How much is an ecosystem worth? Assessing the economic value of conservation, Stefano Pagiola, Konrad von Ritter and Joshua Bishop,
The International Bank for Reconstruction and Development/The World Bank, October 2004.

Environmental taxation: a review of OECD country experience and prospects for economics in transition, A. Markandya and Z. Lehoczai, REC, 2000

International Association of Impact Assessment, www.iaia.org

Decision-making tools: cost-benefit analysis

Cost-benefit analysis (CBA) takes place in the context of a specific project, for example a proposed infrastructure development. CBA is a key tool used by governments and businesses as part of the assessment of whether to go ahead with a proposed project or programme. However, environmental costs and benefits are often disregarded in these analyses. For example, better uses of resources such as land and water are not assessed, or the economic impacts of damage to biodiversity are not considered.

The widespread use of CBA as the primary means of informing policy decisions is contested and often criticised as too narrow by environmental groups. However, despite these important objections, CBA can still be used to promote conservation objectives in one of two very closely related ways. Firstly, a CBA of a proposed project can be conducted that seeks to *include* the economic costs of environmental damage that have

not been adequately evaluated in the existing analysis of that project. The case of the Ebro Water Transfer here is an example of such a use of CBA. Alternatively, a CBA can compare an existing proposal with an alternative, less environmentally damaging proposal that has not been considered sufficiently to date. The CBA of alternative land-uses on the Danube Islands is an example of such an approach that explicitly assesses two alternatives.

Undertaking CBA will typically involve commissioning a consultant or economic expert to conduct the analysis and prepare a CBA of some form on behalf of WWF and any partners. This can range from a full CBA through to a critique of existing analyses. There is an extensive technical literature surrounding the conduct of full CBA. However, not all use of CBA for advocacy needs to follow this extensive procedure to the full. Different approaches will be appropriate in different circumstances.

Cost-benefit analyses carried out by government and business often disregard environmental costs and benefits.

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A diver videos Fiji's soft corals.

KEY THINGS TO LOOK OUT FOR IN USING DECISION-MAKING TOOLS

1 Good communications can contribute to success

Good analysis is only a part of the successful use of economics in influencing policies and plans. Communicating the results is equally important. As with all advocacy work, different communications will be more appropriate for different audiences. Treasury officials may look for rigorous economic analysis, while the public may require the expression of the conclusions in more easily understandable and relevant terms. A range of communications approaches may, therefore, be necessary for any specific case.

2 The depth of analysis can vary

It is not always necessary to spend a huge sum of money conducting an expensive, technical analysis. Sometimes relatively simple calculations followed up by good advocacy can be effective. In assessing this, it is necessary to consider the audience that is being targeted and the extent and quality of the alternative analyses that have already been conducted. Quick analysis may have little impact on a treasury department that has commissioned extensive technical analyses of its own. On the other hand, where the existing analysis has significant gaps and flaws, a more preliminary approach can yield results. Nevertheless, there are dangers with seriously flawed analysis.

3 Clear understanding with the consultant of the uses of any analysis is vital

It is important that any consultant used is clear on what outputs are required from them, in particular if outputs need to be translated into a form that is easily and clearly communicable to the public.

4 The promotion of alternatives is important

The promotion of alternative ways of achieving the same objective as the proposed policy or development is an important part of making the case. Where an infrastructure development project is being criticised, for example, an alternative should be suggested that will achieve the same aims and generate economic development. This proved important in the case of the Ebro Water Transfer.

5 The use of existing data can reduce costs and time

Where existing data and analysis is available, the use of this can save on the very costly process of starting analysis from scratch. It is important to check what has already been done, therefore, as a first step.

11 THE EBRO WATER TRANSFER

Spain

Category **Influencing policies and plans: cost-benefit analysis**

Application The cost-benefit analysis demonstrated the overall negative economic impact of a proposed major infrastructure project.

Problem The Spanish National Hydrological Plan (SNHP), approved by the Spanish government in July 2001, consisted of a huge water transfer of 1,050 cubic hectometres (hm^3) from the Lower Ebro River in the north of the country. The project was split into two large projects: the *Northern Transfer*, which would involve transferring 189hm^3 to the metropolitan area of Barcelona for urban uses; and the *Southern Transfer*, which proposes to transfer 861hm^3 to the Levante Region and South-east Spain for urban and agricultural uses. The Spanish authorities asked for funding from the EU to develop the Plan, totalling over €1.2 billion in the case of the Ebro transfer alone.

The SNHP would have led to serious impacts for the river Ebro, including the complete disappearance of the Ebro Delta (designated as a Natura 2000 zone and Ramsar site). New dams would also have been needed in the High Pyrenees mountains to regulate the water flow of the Ebro, leading to further significant environmental impacts. The SNHP would have contravened EU environmental legislation including the Birds, Habitats, Environmental Impact Assessment and Water Framework Directives.

Economic approach used to address the problem WWF commissioned a cost-benefit analysis of the SNHP from economists at the University of Zaragoza who had worked on Spanish water economics and the SNHP for a number of years. The study found that the government had significantly under-estimated the costs of providing the water by, among other things, failing to account for all of the infrastructure required, failing to account for water treatment costs, and failing to account for water loss in transportation. Taken together, the WWF-commissioned study found that the proposed SNHP, rather than contributing to economic development, had a net negative value of over €3.5 billion. The cost-benefit analysis also drew a sharp distinction between the economic viability of the Northern and Southern transfer projects, arguing that they should be considered separately.

In addition to the direct cost-benefit analysis of the government proposals, the study evaluated alternative solutions to the water needs of the areas covered by the SNHP. The study found that urban water supply for the Barcelona area could be satisfied through a combination of water-saving technologies and alternative water provision methods such as desalination, the reuse of waste water and improved use of ground water. These would meet the city's water needs at 45% of the government estimated costs of the SNHP, and only 30% of the real costs estimated in the WWF study. The study also highlighted the considerable differences in wealth between the poverty of the area from which the water was being taken and the comparative affluence of the areas to which it was being transferred.

WWF was able to use the results of the study as the basis for lobbying politicians and civil servants in Europe and in Spain, and for extensive work with the media.

How did the economic approach contribute to conservation? By using economic arguments, WWF was able to introduce powerful new arguments into the debate. The economic arguments provided access to officials and politicians outside environment ministries who would otherwise have paid little attention to WWF's case.

During March 2004 four internal reports of four Directorate General of the European Commission (Environment, Regional Policy (2) and Internal Market) – which had been asked their advice in relation to EU funding allocations – strongly criticised the Ebro transfer project. All of these reports used the arguments that WWF had been making on the basis of the cost-benefit analysis.

WWF and others lobbied the Spanish Socialist Party, then in opposition, on the basis of the arguments in the cost-benefit analysis. In March 2004 the Socialist Party won the Spanish General Election, and in June 2004 announced that they would be cancelling the SNHP and seeking other ways to solve the water problems of Spain.

Lessons learned

- Communicating the original economic study proved to be exceptionally difficult. The original report was highly technical and economically complex. It was necessary to convert this into a summary document presenting the results of the study in a way that could be accessed by a non-technical audience, and this took considerable work.

- Proposing and evaluating alternative options was crucial in generating opposition to the scheme.

- The cost-benefit analysis was greatly eased by the existence of previous studies, considerable data and existing expertise. Undertaking a cost-benefit analysis in the absence of these would have been expensive.

- The results of the CBA were effective when they could be made relevant to people's own activities, for example the cost of the project per tax-payer – over €100 per Spanish tax-payer – or the relationship between tourism growth and the need for the transfer.

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The Ebro-Riba-Rioja dam, Spain. Proposing alternatives was crucial in generating opposition to the Spanish National Hydrological plan.

12 LAND-USE OPTIONS ON THE DANUBE ISLANDS

Bulgaria

Category **Influencing policies and plans: cost-benefit analysis**

Application

The cost-benefit analysis provided guidance for decision-making on the sustainable management of the Danube Islands and their floodplains, and provided a basis for the monitoring of socio-economic impacts of land-use changes.

Problem

There are 75 Bulgarian Danube islands with a total area of approximately 11,000 hectares. All of these islands, with the exception of Belene Island, are state-owned and managed by the National Forestry Board. The predominant land use of the Danube islands is for poplar monocultures, managed by the National Forestry Board and its regional branches. The natural floodplain forests of the islands have been continuously converted into poplar plantations over recent decades, resulting in the large-scale loss of globally important biodiversity.

This extensive conversion was halted with the adoption of the "Strategy for the Protection and Restoration of Floodplain Forests on the Bulgarian Danube Islands" ("the Strategy"). The Strategy aims to stop and reverse the loss of natural floodplain forest habitats on the islands by halting plantation conversions and through restoring floodplain forests of native species in selected sites of high conservation potential. The Strategy also aims at developing new, sustainable land use options for the islands, which would provide benefits to a wider range of local stakeholders, and would allow for the protection of the native floodplain forests.

Economic approach used to address the problem

A cost-benefit analysis (CBA) of alternative land use options for the various stakeholders in the Danube islands was commissioned by WWF, focusing in particular on the potential socio-economic benefits from the restoration and protection of healthy floodplain ecosystems. In order to undertake the CBA, it was necessary to identify a set of alternative land use options, describe the range of stakeholders, and quantify the impacts of each land use option on each stakeholder group.

The outcome of the CBA of alternative land use options for the different stakeholders was used to identify economically feasible and environmentally sound alternatives to poplar plantations and provide recommendations for the development of these alternatives. The study showed that the National Forestry Board realized very small profits from these poplar plantations, and in some cases they were operated at a net loss. A small number of private forestry companies seemed to be the only stakeholders deriving clear benefit from the poplar monocultures. The study indicated that further development of poplar plantations at the expense of natural forest would result in the loss of biodiversity and other non-use and indirect economic benefits.

Conserving biodiversity of the Bulgarian Danube islands, on the other hand, can be a source of significant benefits for a wider range of stakeholders. This is especially so for local communities through tourism, small scale resource harvesting, recreation, the flood protection functions of floodplain forests, preservation of genetic biodiversity, and a basis for scientific research.

How did the economic approach contribute to conservation?

The analysis provided an economic case for changing the previous policy of expanding poplar plantations on the Danube islands. It indicated that profits from poplar plantations should be raised through improved management of the existing ones, as well as through the exclusion from production of areas identified as unsuitable for poplar forestry which was causing economic loss. To take full advantage of the alternative land use values, recommendations were made to

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Alternative land uses to poplar monoculture can increase benefits from the Danube islands.

protect and restore natural forests, to introduce sustainable forestry practices with extensive management of close-to-natural forests, and to develop a basis for tourism and recreation on the Danube islands. Some of these recommendations, especially those related to improved forestry practices, protection, restoration and extensive forestry management, have been included in the Action Plan for the Protection and Restoration of Floodplain Forests on the Bulgarian Danube Islands for 2003-2008.

Lessons learned

- The single major land use of the Danube islands for poplar plantations provides limited benefits for a small number of stakeholders, most of them outside of local communities. Diversifying land use options using the natural values of the area can result in increased benefits for a wider range of stakeholders, especially in the local communities.

- A number of limitations prevented a comprehensive cost-benefit analysis in the project area, the most important being availability of information and local expertise in environmental economics. These limitations should be addressed early in the design of future CBAs to ensure successful completion.

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Decision-making tools: strategic environmental assessment

CBA as a decision-making tool focuses on specific projects and possible alternatives. Strategic Environmental Assessment (SEA) is a process for assessing the social and environmental impacts of broad policies and programmes. Undertaking an SEA for a major development programme or sectoral policy can help to ensure that environmental and sustainability concerns are fully incorporated in planning, and SEAs are now being used in range of contexts including trade policy, major infrastructure programmes, and regional or sectoral planning programmes such as a country's forestry policy or the management of a major river basin.

Good planning can lead to reduced conflict and disputes at a later stage.

There can on occasion be resistance from certain sectors and industries to the conduct of an SEA as they may fear that it will lead to constraints being placed on their ability to operate. However, companies and government can be persuaded to support SEA if it is pointed out to them that good planning can lead to reduced conflict and disputes at a later stage.

While SEAs tend to be conducted by governments, there are a number of important roles that NGOs such as WWF can play. NGOs can call for governments to conduct an SEA where this has not been done and there are concerns over current proposals or policies – as has been the case
in WWF advocacy in the context of a number of major infrastructure developments. NGOs can facilitate the establishment and conduct of an SEA in partnership with government. And, NGOs can provide specialist input into government sponsored SEAs.

NGOs such as WWF can be particularly well placed to assist in the public consultation and facilitation elements that are so important to the SEA approach. In the case illustrated here from Fiji, WWF and the Asian Development Bank collaborated to carry out the SEA having signed a memorandum of understanding with the Ministry of Tourism.

13 CREATING A TOURISM DEVELOPMENT PLAN

Fiji

Category **Influencing policies and plans: strategic environmental assessment**

Application To assess, with the various stakeholders, whether a Government economic plan is sustainable and, if not, how it needs to be changed.

Problem Tourism is a critical pillar of the Fijian economy. Since 1989 it has generated more foreign earnings than any other sector. With an ailing sugar industry – due to a loss of preferential trade agreements and an aging infrastructure – the authorities are keen to further develop the tourist sector. The Tourism Development Plan (TDP) 1997-2003 was a blueprint to do this. The TDP calls for "step change" growth in tourism, arguing that Fiji must move away from "bumbling along" much as before, with a modest increase in the accommodation stock, to a large-scale growth in its tourist industry. Although tourism offers considerable economic opportunities to Fiji and the Fijian people, unless it is properly managed it can also produce many environmental and social problems, effectively damaging its long-term future. In recognition of this, the WWF-South Pacific Programme (SPP) has identified tourism as a major threat to the Fiji Barrier reef.

Economic approach used to address the problem The WWF-SPP and the Asian Development Bank (ADB) recognised the potential pitfalls of the tourism strategy and coordinated a Strategic Environmental Assessment (SEA). The SEA was carried out to understand the likely environmental and socio-economic impacts of the TDP. The SEA compared the current environmental, social and economic baseline and likely trends under the TDP against sustainability objectives. This allowed an assessment to be made on whether or not the TDP was sustainable and in what ways it could be improved. The study was carried out over a two month period by a team of three people. The assessment relied primarily on secondary data sources with some field work as well as extensive discussions with experts.

The study showed that there are particular areas within Fiji where tourist development is causing serious environmental degradation, with the potential for irreversible damage. It also highlighted the growing tensions between developers and local communities, with many of the economic benefits of Fiji's tourism leaking out of the economy rather than contributing to local communities. Therefore, the team concluded that the "step-change" growth in tourism could tip the balance into serious environmental degradation in Fiji without achieving as many benefits for the local community as possible.

For the findings of the SEA to be supported and adopted it was necessary to work closely with the major players in the tourism sector. Before undertaking the assessment, WWF signed a Memorandum of Understanding (MOU) with the Ministry of Tourism. The MOU stated that the Ministry would take on board the findings of the assessment as part of their mid-term review of the TDP.

To ensure that other key players in the tourism sector were involved, an Advisory Group was established to guide, and take responsibility for, the assessment. This group included prominent members of other Government departments, industry, academia, as well as consultants and civil society groups. The Advisory Group was fundamental to the collaboration, allowing individuals with often differing viewpoints to sit together and constructively assess the future of tourism within Fiji. To influence tourism policy within Fiji it was necessary to work closely with the Ministry of Tourism, as well as other key players in the tourism sector.

How did the economic approach contribute to conservation

Changes to tourism legislation will not happen immediately, but the ball is rolling. The recommendations from the SEA have fed into the mid-term review and will also feed into the next tourist development strategy in 2005. The Advisory Group continues to meet and to champion the recommendations. The ADB are using the results from the study to help shape a US$20 million loan to promote sustainable tourism in Fiji. The ADB have also invited WWF-SPP to be part of the technical team assessing the sustainable tourism loan package, and have adopted the Advisory Group from the study as the Advisory Group for the loan.

Lessons learned

- The fact that the assessment was carried out by a team of independent experts with in-depth knowledge of the methodology and the country ensured that any information generated was taken seriously.

- The timing of the assessment was good. In this case there was a mid-term review of the TDP coming up and a growing discontent by the landowners with current tourism development procedures. This provided an opportunity to look at alternatives.

- Partnerships are critical to success. Having signed a partnership agreement with ADB and a MoU with the Ministry of Tourism prior to the study we had strong allies from the outset.

- The support of the Advisory group was key. It provided a strong collective voice to put forward recommendations. The long term success and adoption of recommendations of the report is dependent on continued stakeholder engagement and support.

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The study can be found at: www.wwf.org.uk/filelibrary/pdf/fijitourism.pdf

Valuation for advocacy

Valuation exercises need to be carefully targeted.

The economic valuation of biodiversity can make two contributions to economic approaches to conservation. Firstly, valuation is an important preliminary element in a number of the approaches discussed in this guide. For example, it is a key first step in seeking to establish mechanisms for financing conservation such as payments for environmental services. Secondly, there can also be a role for valuation as a tool in its own right in pursuing advocacy objectives: by demonstrating that the economic values of an ecosystem have been underestimated, it can be argued that the ecosystem is not receiving sufficient attention in public policy. This can introduce powerful new arguments in favour of increased protection of the environment.

Valuation exercises can range enormously in scale, from a study of the values of a specific, local ecosystem – for example a particular wetland – to the valuation of several sectors across a country, as in the case illustrated here of the valuation of Samoa's marine and terrestrial resources. Valuation exercises can also be used more generally, as in the examples here illustrating the value of the world's coral reefs or wetlands.

Caution is required in considering when and how valuation studies should be used. General estimates of the total value of biodiversity in a given location may be interesting but have little impact on key decision-makers. Equally, accurate valuation studies are time-consuming and expensive, while vague or flawed studies can ultimately serve to discredit an argument. For this reason, CBA and its alternatives can often be a more useful advocacy tool than valuation, as it provides more focused information on the consequences of a particular decision and its alternatives.

Where valuation is used as an advocacy tool, the communications strategy that is used to accompany the study will often be as important as the analysis itself.

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Fisheries contributed over 7% of Samoa's GDP.

KEY THINGS TO LOOK OUT FOR IN USING VALUATION FOR ADVOCACY

1 Valuation can be more effective if targeted at a specific decision or process

While general valuation studies can yield interesting findings, valuation exercises will often achieve more when it is clear that they are focused on a particular political decision or form part of a specific process. For example, a valuation exercise can be used to argue that an ecosystem threatened by an infrastructure project is important and should be conserved. In the case from Samoa introduced here, the economic valuation exercise contributed to the production of a national biodiversity plan; as a consequence, the findings of the valuation had greater policy impact than if the study had been conducted in isolation.

2 The extent and depth of valuation studies can vary

Full, in-depth valuation studies can be time-consuming and expensive. In some advocacy contexts, it may not be necessary to conduct a full analysis, for example focusing instead only a few of the most important economic values of an ecosystem. An alternative approach seeks to indicate the types and extent of economic values of an ecosystem to encourage decision-makers to rethink their approach. Such an approach can be thought of as 'signposting' the value of natural resources. As with CBA, however, the dangers of flawed or overstated analysis must be guarded against.

3 Employment as well as income can be useful to assess

Conventional valuation studies express the value of natural resources only in terms of income. However, where poverty and employment are important policy concerns, it can be useful to estimate the employment and livelihoods supported by an ecosystem as well as expressing its value in terms of income. It can also be powerful to assess which groups benefit from the economic values of biodiversity, as these are often the poorest sections of communities.

14 VALUING MARINE AND TERRESTRIRAL RESOURCES

Samoa

Valuation for advocacy

Category

Application

Valuation demonstrated the economic value of the country's environmental resources and pointed to important changes to government policy to improve the management of these resources.

Problem

The long-term growth of Samoa's economy is highly dependent on the wise management of its natural resources. However, the value of the country's resources have not been adequately acknowledged or properly accounted for, and this has led to the gradual decline in its stocks of environmental assets, threatening both the Samoan economy and internationally important biodiversity.

Economic approach used to address the problem

In devising the Samoan National Biodiversity Strategy and Action Plan (NBSAP), the UNDP and the Samoan Government recognised the need for the economic value of Samoa's marine resources to be identified and incorporated. The authorities asked WWF to assist with carrying out an economic valuation study to highlight how much the country's biodiversity was worth in monetary terms – specifically within the forestry and marine sectors. This exercise was intended to raise awareness of the importance of wise management of the country's scarce natural resources and to recommend different regulatory and/or economic mechanisms that could be introduced to maximise the returns from these values and ensure the sustainable use of resources.

The UNDP, the Samoan Government and the WWF funded a consultant from Universiti Putra Malaysia to estimate the economic value of Samoa's marine and terrestrial resources, which was carried out in collaboration with WWF staff. The results had to be generated in less than three months on a tight budget, and therefore not all of the values of the environment could be estimated. The study focused on the larger ones, such as rents for timber and fisheries, the recreation values of environmental resources, the flood protection function of mangroves and carbon sequestration. Techniques used included surveys to find out how much people were willing to pay to enter recreation areas and simple modelling techniques to calculate appropriate rents for use of the country's forests and fisheries. For some of the more complex values of nature, such as carbon sequestration properties of forests, estimates from other countries had to be used.

The study found that Samoa's agriculture and fisheries sectors contribute 8.2% and 7.8% of GDP respectively, while tourism earnings were estimated to contribute 18.8% of GDP.

How did the economic approach contribute to conservation?

Once the study was completed, a workshop for different Government departments of Samoa was held to discuss the results and to advance possible policy implications. The study and subsequent workshop were successful in raising awareness within Government departments and civil society of the critical economic importance of the country's scarce resources. The findings from the study were incorporated into the NBSAP, and actions have been identified over the short and long term to integrate them into national development planning. Key proposed interventions, most of which have been acted upon, include:

- The need to charge entrance fees to protected areas;
- Increasing fisheries charges to larger vessels to generate greater government revenues and decrease the incentives for over-exploitation of the fishery;
- The introduction of mechanisms to ensure that local landowners receive greater returns from forestry;
- The integration of economic valuation in key government decision-making processes;
- The establishment of a 'National Trust Fund', funded in part by the new fees, and partly by international donors.

Following the study, the Samoan authorities hired a full time environmental economist to carry out further valuations in additional areas. Interest in the valuation of natural resources within the Pacific Rim has increased, and has resulted in similar studies carried out in other Pacific Island nations.

Lessons learned

- This case study clearly showed the power of talking in terms of money. Once people saw the huge value of biodiversity in dollar terms they quickly understood its importance.
- By talking in economic language we were able to engage Ministries who traditionally did not work on environmental issues, for example the Finance Ministry.
- The involvement of external donors, in this case the UNDP, can be very important in ensuring the interest of the National Government at an early stage.

Further information

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The study can be found at:
www.wwf.org.uk/filelibrary/pdf/econ_samoa.pdf

15 THE ECONOMICS OF WORLD-WIDE CORAL REEF DEGRADATION

Global Study

Category **Valuation for advocacy**

Application Demonstrating the economic value of coral reefs to decision-makers facilitates a more concerted management effort.

Problem Coral reefs have been evolving for the last 240 million years and although they only cover 0.2% of the ocean's floor scientists estimate that, in total, more than 1 million plant and animal species are associated with the coral reef ecosystem. These important natural resources provide a home, shelter and food for nearly one quarter of all known marine species, including over 4,000 species of fish, 700 species of coral, and thousands of other forms of plant and animal life.

Despite their importance, coral reefs are under heavy pressure. Already, 27% of the world's coral reefs have been permanently lost and if destruction continues at the current level a further 30% is at risk of being lost in the coming 30 years. The principal causes of reef decline are run-off and land-based pollution from effluent discharge of industrial waste, domestic waste, agricultural sources and logging practices; destructive fishing practices such as blast and cyanide fishing; tourism over-use and associated land reclamation and building activities; and climate change and the associated effect of coral bleaching. It is clear that policy- and decision-makers often do not recognise the economic values of coral reefs, with coral reef conservation consequently not treated as a policy priority.

Economic approach used to address the problem In order to highlight the value of the world's coral reefs, WWF commissioned three consultants with significant experience in the valuation of marine environmental goods and services to draw together existing analysis and new data, and to produce a compact, globally orientated report targeted at decision-makers. Two principal major existing analyses of the economic values of coral reefs in Hawaii and South-east Asia provided the basis for the estimation of the value of reefs in countries where no primary research had been undertaken.

The study illustrated that reefs provide a variety of goods and services which create economic benefits to society. These economic benefits are often taken for granted, yet if these goods and services were taken away or destroyed, we would be forced to provide other methods to supply these benefits at significant costs. The study estimated that the potential economic benefit for the world is in the order of US$30 billion per year if coral reefs are well managed and intact. The corresponding global asset value of coral reefs is estimated at nearly US$800 billion, calculated at a 3% discount rate and a 50 year timeframe.

These benefits come from four principal areas. Firstly, the potential net benefits from fisheries are estimated at US$5.7 billion a year. Yet, over-fishing and destructive fishing have taken their toll and reef fishery benefits in most places in the developing world are now close to zero – fishers merely fish to stay alive without making any profits. Secondly, the aesthetic beauty of coral reefs attracts millions of tourists world-wide who come to dive and snorkel amongst these natural treasures. Reef tourism is growing rapidly and is estimated to provide potential annual net benefits of US$9.6 billion. Thirdly, coral reefs also act as natural sea walls by providing a buffer to protect inshore areas from the pounding of ocean waves. This protective function of reefs is estimated to be valued at US$9.0 billion per year. Finally, reef biodiversity has a high research and conservation value, as well as a non-use value (the value people attach simply to knowing that reefs exist), estimated together at US$5.5 billion annually. In addition to these quantified

values, reefs have drawn a mass of medical and pharmaceutical research interest in the pursuit of finding cures for human diseases.

How did the economic approach contribute to conservation?

The publication was launched globally in February 2003 and was a foundation document for a WWF coral reefs campaign aimed at drawing policy attention and public funding toward coral reef conservation issues. WWF-US delivered copies to every state Senator and Congressman in the United States, and the report received global media coverage in more than 250 newspapers, web sites, radio and television programmes, including cnn.com, the BBC, Associated Press, Reuters, and Radio International.

Copies were made available to delegates at the 2003 World Parks Congress and the 2004 7th Conference of Parties for the Convention on Biological Diversity (CBD COP7). In both conferences, the report was referenced in presentations and workshops to demonstrate the contradictions of a short term approach to natural resource exploitation and used to make the economic case for long term, sustainable management.

Lessons learned

- The study highlighted that broad-based valuations with only very crude estimates of values can be useful in raising awareness of an issue.

- Broad overview studies can be based mainly on secondary data. Although this makes the findings less robust, it can help to bring down the cost of undertaking the study.

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Full report available to download at: www.panda.org/downloads/marine/cesardegradationreport100203.pdf

16 THE ECONOMIC VALUES OF GLOBAL WETLANDS

Global Study

Category **Valuation for advocacy**

Application

The study demonstrated to international policy makers the significant economic value of wetlands and demonstrated that reversing global wetland loss can help to meet basic social and economic needs.

Problem

Freshwater wetlands have a high conservation significance, supporting concentrated populations of birds, mammals, reptiles, amphibians, fish and invertebrate species. It has been estimated that freshwater wetlands hold more than 40% of all the world's species and 12% of all animal species. Individual wetlands can be extremely important in supporting high numbers of endemic species. In addition to their direct biodiversity significance, wetlands play a vital role in supporting hydrological functions, and therefore underpinning wider freshwater ecosystems.

Despite their importance, wetlands throughout the world are being modified and reclaimed. It has been estimated that since 1900 more than half of the world's wetlands have disappeared, largely through conversion to agricultural use. In the US, for example, 87% of wetland loss has been to agricultural development. Wetlands, however, provide numerous goods and services that have an economic value not only to the people living in the periphery of a wetland (in terms of water, fish, reeds and wildlife), but also to those living downstream (wetlands regulate water supply and recycle human wastes). A major factor contributing to the loss of wetlands is that decision-makers often have insufficient understanding of these economic values of wetlands.

Economic approach used to address the problem

Over the past years, many economic valuation studies of wetlands around the world have been carried out by different organizations. However, a comprehensive overview of wetland economic values globally is lacking. A database on economic valuations of wetlands around the world has recently been developed by the Institute for Environmental Studies (IVM) from the Free University of Amsterdam in The Netherlands. WWF together with IVM used this database to derive an estimate of the economic value of the world's wetlands. The study also estimated average wetland economic values by geographical region; wetland type (such as mangrove, freshwater marsh, and freshwater woodland); and by wetland product (food, water, raw materials, tourism, nutrient recycling, flood control).

The study estimated the value of the world's wetlands at US$70 billion per year. The largest economic value of the world's wetlands are the hydrological services provided through flood control and water filtering. Other significant values include fishing, biodiversity, and sources of local water supply, materials and firewood. As well as estimating global values, the report also highlighted cases of wetlands around the world that have been valued economically and which illustrate the substantial economic losses when wetlands are degraded. For example, the Charles River Basin wetlands in Massachusetts consist of 3,455 hectares of freshwater marsh and wooded swamp. The benefits derived from these wetlands include flood control, amenity values, pollution reduction, water supply and recreation. The flood damage prevention and pollution control functions alone are worth US$65 million per annum.

How did the economic approach contribute to conservation

The integrated global report has played a wide-ranging role in communicating the importance of wetlands to decision-makers around the world. The report received wide international media coverage, including BBC World, as well as coverage in numerous national media through press releases from WWF regional offices. The report was widely distributed with international policy makers. Major partners responded as a result of the report, for example key policy makers involved in the EU Water Framework Directive. The report continues to be used in government agencies in developing countries.

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Full copy of the report: www.panda.org/downloads/freshwater/wetlandsbrochurefinal.pdf

Reforming taxation, charges and subsidies

The ways in which governments raise taxes and distribute revenues has a huge impact on the economy and, therefore, on the environment. Governments around the world use taxation as a means of encouraging those forms of economic activity that they wish to support or discourage for social, environmental or – all too often – political reasons.

By increasing taxes on environmentally harmful activities, the extent of the activity can be reduced. For example, an increase in the tax raised from fuel can provide incentives for a reduction in pollution. In the case from Kenya here, a case was made to the government that the tax on felling trees should be increased, so as to encourage more careful use of forest resources. Equally, reduced taxes can encourage environmentally sustainable activities. In the case from the UK here, WWF called for a reduction in tax rates on homes that were built or altered to reduce environmental impact. Often these two approaches can be linked together, with conservationists calling for a switch in taxation that rewards sustainability and penalises environmentally destructive approaches.

The ways in which governments distribute revenues and subsidies can have an equally profound effect on the environment. As with taxes, the level of subsidy can be used by governments to encourage certain activities; for example, in Europe, farmers are paid subsidies to maintain environmental standards. Subsidies can also be paid from central government to local and regional governments to encourage or reward environmental protection, as in the case from Brazil illustrated here.

Reforming taxation is politically sensitive, but can result in widespread benefits for the environment across an economy.

There is often therefore a role for conservation organisations in advocating for government taxes and subsidies that support sustainability and environmental protection and penalise environmentally harmful behaviour. While reform of taxation can be a challenge because tax policy is highly political, successful changes can result in widespread beneficial impacts across a whole economy.

Seeking a reform of taxation requires an analysis of the impacts of current taxation policy on the particular aspect of the environment in question, and an analysis of the impacts of the proposed alternative scheme. The level of analysis required may vary hugely in different parts of the world: the tax systems of developed Western nations are highly sophisticated, and proposed changes will therefore need to be backed by an equivalent sophistication in analysis.

KEY THINGS TO LOOK OUT FOR IN REFORMING TAXATION, CHARGES AND SUBSIDIES

1 The impact of tax reform varies hugely in different parts of the world

In many parts of the world, tax collection systems are weak and the legal enforcement of the regulations that underpin them can be small or non-existent. Under these circumstances, the impacts of reform in the tax system can be less than hoped for. For example, the impact of tax reform on forest reduction will be small if most of the trees harvested are being removed illegally anyhow. Equally, the use of subsidies are less prevalent in developing countries where there is limited budget surplus available.

2 Tax reform creates winners and losers

Taxation is a highly contested and politicised area of public policy because of the direct impact it has on individuals and businesses. Most, if not all, tax reform proposals are likely to leave some groups worse off, and these groups are likely to resist strongly any proposals. Tax reform can also leave the government a loser if less revenue is collected. These problems can be partially addressed through careful design and gradual implementation. Complementary policies that seek to offset the changes can be used.

17 TAX INCENTIVES FOR SUSTAINABLE HOUSING

United Kingdom

Category **Reforming taxation, charges and subsidies**

Application

Introducing reduced rates of tax has the potential to provide significant incentives to encourage the development of sustainable homes.

Problem

More than half of all resources consumed globally are used in construction, and 45% of energy generated across the world is used to heat, light, and ventilate our buildings, with a further 5% produced during their construction. In the UK, Government projections suggest that 3.8 million new dwellings will be required in England between 1996 and 2021. This equates to an average of 225,000 new homes every year, of which around 150,000 will be new build housing. Not only do most homes have significant direct environmental impacts in terms of generating CO_2 and waste and using natural resources such as water and aggregates, but the way in which homes and communities are developed also determines our lifestyle decisions and our overall impact on the environment.

WWF's One Million Sustainable Homes Campaign is working with government, industry and consumers to ensure that one million sustainable homes are developed across the UK by 2012, including refurbished as well as new homes. However, despite the adverse environmental impacts of most UK homes, there are currently few financial incentives for house builders and property owners to construct houses with low environmental impact or undertake conversion of existing properties.

Economic approach used to address the problem

WWF commissioned Environmental Resources Management (ERM), an environmental economics consultancy, to prepare a report examining the possibilities for the government to introduce reforms to the tax system so as to provide incentives to encourage the development of more sustainable homes.

The report analysed the impact on the design, construction and maintenance of housing of the existing government tax structure. It also surveyed existing government policies towards the introduction of green taxation. Against this background, the report suggested a long list of possible changes to the tax regime that could be introduced to encourage sustainable housing, and evaluated these possibilities in terms of how targeted each was in achieving sustainability outcomes, how large the impact of each would be, and how acceptable each proposal would be to the government.

On the basis of this ranking, the report suggested four fiscal measures which seemed to be most promising: the removal of 'stamp duty' (the UK tax on house sales) on sustainably constructed houses; a lower rate of VAT (sales tax) on sustainably constructed new homes; a reduction in VAT on supplies of materials that contribute towards housing sustainability, for example rainwater harvesting systems and low solvent paints; and a capital allowance for expenditure on the conversion of existing premises to more sustainable homes.

WWF has used the findings of the report to lobby the government, and in 2003 WWF was asked by the government to be a member of the Sustainable Buildings Task Group (SBTG). WWF was the only NGO representative on the SBTG, and WWF's calls for fiscal incentives were echoed when the SBTG reported in 2004,

WWF has led calls for tax incentives for sustainably built new homes in the UK.

WWF-UK / © John BIRDSALL

including calls for stamp duty relief on sustainable new homes and a stamp duty rebate for homebuyers who carry out energy efficiency work on existing properties within a certain timeframe after moving in.

How did the economic approach contribute to conservation

The Government has indicated its willingness to consider some fiscal measures towards more sustainable housing, and in the 2004 Budget the government announced that it was introducing tax relief for landlords on capital expenditure on energy-saving measures such as loft and cavity wall insulation. WWF is continuing to call for a package of fiscal measures, and the government has announced that it will consider introducing a 'Green Landlord' scheme.

Lessons learned

- The ERM report allowed WWF to engage with a range of groups, including follow-up meetings with different parts of the UK Treasury; even so, successful advocacy with the Treasury has proved difficult, and the development of a new language to describe the policy changes that WWF is seeking is necessary.

- The report was particularly useful in setting out the advantages and disadvantages and providing significant background justification for each of the policy proposals

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18 THE ICMS ECOLOGICO

Brazil

Category **Reforming taxation, charges and subsidies**

Application

Environmental criteria have been incorporated into the ways in which revenue is distributed to municipalities.

Problem

Only 7% of Brazil's original area of Atlantic forest remains, and, according to government statistics, the average annual deforestation rate in the Brazilian Amazon during the 1990s was about 7,000 square miles per year. Logging, slash and burn agriculture, soybean farming and cattle ranching are among the most acute causes of deforestation.

Municipal protected areas have a vital role to play in managing the forest. However, the benefits from the protection of Brazil's forests are regional and global. The way in which revenue is allocated to municipal governments provides disincentives to the establishment of protected areas. In particular, a very important source of municipal revenue comes through a sales tax, the ICMS. The ICMS is collected at the state (provincial) level, out of which 25% is reallocated back to municipal governments, largely on the basis of the level of economic activity in that municipality. As a consequence, the presence or establishment of protected areas within a municipality that has the effect of decreasing the level of economic activity results in lower revenues being allocated to that municipality, whatever wider benefits may result from improved forest protection.

Economic approach used to address the problem

While 75% of the ICMS revenue allocated back to municipalities is calculated on the basis of economic activity, a range of criteria specified politically by state governments determine the distribution of the remainder. Typical categories include population, geography and the extent of primary agricultural production. However, in 1992, the state of Parana introduced an ecological criterion into the distribution of the ICMS. An amount (2.5%) of the ICMS revenue would be divided between those municipalities with protected areas. This would provide compensation for lost municipal revenue. It was also hoped it would provide an incentive to increase the number of protected areas.

WWF have worked with other states in Brazil to explore the possibilities for the expansion of the ICMS Ecologico, as it has come to be known. In addition to promoting the adoption of the ICMS Ecologico, WWF has worked with states to provide technical assistance and publicity around the introduction of the ICMS Ecologico.

In Brazil, 11 provincial states have now adopted the ICMS Ecologico. In these states, from 1-6% of the municipal share of the ICMS is allocated to municipalities according to ecological criteria, and a range of criteria have been introduced in different states in addition to protected area size and management quality, including watershed protection functions. Although the announcement by the government of Brazil that it may replace the ICMS as part of a major review of tax policies initially caused concerns among environmental NGOs, the experience of the ICMS is being used as a strong basis for the promotion of ecological principles in any new taxation system.

How did the economic tool contribute to conservation

Payments from the ICMS Ecologico have provided significant income to municipalities. In Parana, for example, around US$200 million was redistributed under the scheme between 1992 and 2001, while US$60 million was redistributed in the state of Minas Gerais over the same period. While it is not possible to distinguish how this revenue has been spent from the rest of the revenue distributed under the ICMS, the incentive effect is already apparent in states such as Parana and Minas Gerais where the scheme has been in place for a number of years. While clear biodiversity gains as a result of the introduction of the scheme may not always be easily demonstrable in all states, in many municipalities the introduction of the ICMS Ecologico has changed attitudes to protected areas.

Lessons learned

- Monitoring of protected area quality and management standards is needed as a supplement to a simple measure of protected area size. Some states have implemented such an approach, but in others protected areas exist more on paper than in reality on the ground.

- Changes in revenue-sharing create losers and winners and this can have knock-on effects, even impacting negatively on municipalities with important protected areas.

- The signing of formalised agreements between WWF and the implementing states was important in clarifying and establishing the role that WWF would play in publicising the scheme.

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19 STUMPAGE FEE REFORM

Kenya

Category **Reforming taxation, charges and subsidies**

Application Identifying tax regimes which encourage sustainable use of timber.

Problem Kenya's forests generate revenue, employment and a range of ecological services. The forests provide 95% of rural energy supply and generate value added products amounting to US$200 million annually, an equivalent of 1.5% of GDP. Despite this significant role, the forests are being lost at a rate of 5000 hectares per year, undermining the prospects for future economic development. Among the most threatened industries is Kenya's woodcarving industry, which employs at least 60,000 carvers, but which has historically depended on increasingly rare wild indigenous hardwoods, particularly two species, Mpingo or African black wood *(Dalbergia melanoxylon)* and Muhuhu or 'Mahogany' *(Brachylaena huillensis)*. The depletion of the populations of these species for wood-carving and other uses has threatened the resource base of the carving industry.

In addition to their economic importance, Kenya's forests are recognised as among the most important areas for biodiversity on the globe, a biodiversity richness threatened by on-going deforestation.

Economic approach used to address the problem WWF's People and Plants Initiative supported a three-year study of the economic aspects of the woodcarving industry in Kenya undertaken as an MSc thesis. The study found that the rapid escalation in demand for and utilisation of wood resources in Kenya called for major revisions to wood use policies if the serious consequences of resource use shortage were to be avoided. This was particularly the case where trees used for the carving industry were being logged for low-value uses such as fuelwood, building materials and charcoal burning.

The study found that the use of the main woodcarving species such as Muhuhu and Mpingo was the best option in terms of economic returns. The unit price of Ksh280,000 (US$3,500) per cubic meter that could be achieved by the carving industry was considerably higher than alternatives such as charcoal or sawn timber. In the case of high value carving species, the price of wood in carving was up to five times the price that was paid for the wood as prime sawn timber, and many times more than the price of the wood as firewood, poles for building, or charcoal.

The logging of Kenya's indigenous forests was being undertaken both legally and illegally. However, the study found that even if the government was strict in enforcing the rules of access to the species used for wood carving, the existing stumpage fee levels – the tax paid for cutting of trees – was far too low. The stumpage fee failed to reflect the scarcity of the resource and ensure that any trees that were cut made the greatest contribution to economic development. Finding an appropriate and realistic level of stumpage fee combined with strict enforcement of access rules were necessary complements in ensuring conservation of the remaining depleted stocks.

In addition to the stumpage fee, the study found that the growth in the wood carving industry had stretched the marketing abilities of the carver co-operatives. As a result, many carvers were not receiving as much for the carvings as they might, and the marketing failure approach discouraged a switch to the production of smaller numbers of higher value products.

How did the economic approach contribute to conservation?

The study illustrated that a) without proper resource planning overexploitation can be a possible outcome; and, b) where choices needed to be made between competing uses for a scarce and valuable forest resource, priority should be given to the use which gives the greatest subsequent returns to community wellbeing. By surveying the market prices for wood around the country, the study demonstrated this use would not be possible without a change in Kenya's stumpage price setting procedures. However, by the time that the study was completed, the Kenyan government had introduced a ban on logging, rendering inapplicable the immediate conclusions relating to stumpage fees. Despite this, the detailed analysis of the market for wood for carving contained in the study made a significant contribution to the development of the Goodwoods project, in which WWF has been a leading partner.

Lessons learned

- A detailed economic study of the market for a natural product can have more than one use. In the current case, the recommendation concerning stumpage fees was not immediately useful. However, the wider information that was gained over the market for wood in the carving industry proved useful in designing future projects, and future policy changes may make the recommendation directly relevant again.

- Although nor recognised as a wood consuming industry by existing forest management guidelines, wood carving is an important eye opener into the potential for alternative uses of wood in Kenya than sawn timber and pulp.

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Dendrobates tinctorius (poison dart frog), Amazonian forest, Brazil. The introduction of an ecological criterion into the distribution of revenue by Brazil's states has provided incentives to municipalities to establish protected areas.

Next steps: getting started

Considerable resources can be saved by seeking advice in the early stages of designing economic approaches.

Attempting to use economic approaches will usually involve commissioning independent economic advice or expertise. Finding the appropriate assistance can sometimes prove a challenge. Good places to start can include university economics faculties, special research institutes, international environment or development NGOs, or private consultancy organisations. A directory of environmental experts will be included as part of www.biodiversityeconomics.org, and this may be able to provide some suggestions.

Economic analysis can be expensive. Therefore, it can often be helpful to adopt an iterative approach to investigating the possibilities. Hence, an initial scoping study might seek to provide a brief overview of the underlying economic drivers of biodiversity loss in an area, with later more detailed studies investigating possible solutions. For example, an initial study might identify government subsidies or the absence of certain markets as causes of unsustainable practices. This could then be followed up with more detailed analysis of the subsidies or markets identified.

A clear shared understanding of the objectives and outputs of any work with a consultant is important. WWF's experience has suggested that it can save considerable resources to seek advice in the process of drawing up terms of reference with consultants: this can again help to increase the relevance and impact of work that is commissioned. There are a number of possible centres of expertise within WWF that may be able to provide such initial guidance:

- WWF's Sustainable Economics Network (WWF-SEN).
  WWF-SEN is an informal grouping of economists working around the WWF network, co-ordinated from WWF-UK. For more details, contact us at: economics@wwf.org.uk

- The Center for Conservation Finance.
  Based at WWF-US, The Center for Conservation Finance works with WWF staff around the world to raise money to conserve endangered species and Global 200 ecoregions. Contact Esteban Brenes: esteban.brenes@wwfus.org

- The Macroeconomic Programme Office.
  Based in Washington, WWF's MPO explores the links between macroeconomics and the environment. Contact Pablo Gutman: pablo.gutman@wwfus.org

References

Publications

How much is an ecosystem worth? Assessing the economic value of conservation, Stefano Pagiola, Konrad von Ritter and Joshua Bishop, The International Bank for Reconstruction and Development/The World Bank, October 2004.

Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development, ed. Stefano Pagiola, Earthscan Publications, 2002.

From good-will to payments for environmental services: A survey of financing alternatives for sustainable natural resource management in developing countries, ed. Pablo Gutman, Danida and WWF, August 2003.

Making markets work for forest communities, Sara Scherr, Andy White and David Kaimowitz, Forest Trends, 2002.

Environmental taxation: a review of OECD country experience and prospects for economies in transition, A. Markandya and Z. Lehoczai, REC, 2000.

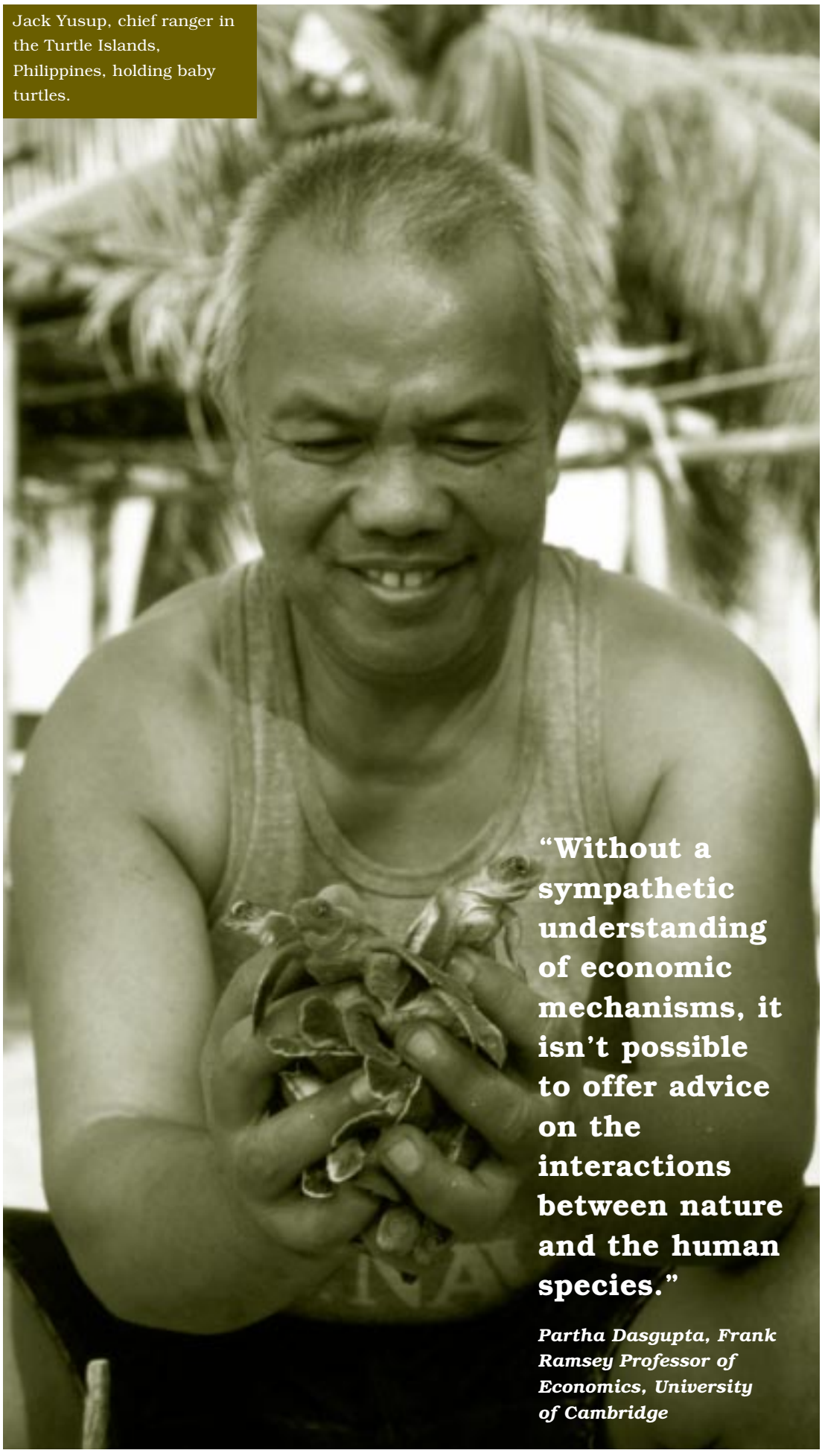
Websites

WWF and IUCN:
www.biodiversityeconomics.org

WWF-US Center for Conservation Finance:
www.worldwildlife.org/conservationfinance

The Conservation Finance Alliance:
www.conservationfinance.org

International Association of Impact Assessment:
www.iaia.org



Jack Yusup, chief ranger in the Turtle Islands, Philippines, holding baby turtles.

“Without a sympathetic understanding of economic mechanisms, it isn’t possible to offer advice on the interactions between nature and the human species.”

Partha Dasgupta, Frank Ramsey Professor of Economics, University of Cambridge

The mission of WWF is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by:

- conserving the world's biological diversity
- ensuring that the use of renewable resources is sustainable
- promoting the reduction of pollution and wasteful consumption

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