



**Pita A. Verweij & Michiel de Man**

Copernicus Institute for Sustainable Development and Innovation  
Department of Science, Technology and Society  
Faculty of Science  
Utrecht University  
The Netherlands

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Authors: Pita A. Verweij and Michiel de Man  
Copernicus Institute for Sustainable Development and Innovation  
Department of Science, Technology and Society  
Faculty of Science  
Utrecht University  
Contact person: Pita Verweij, p.a.verweij@chem.uu.nl  
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## **Executive summary**

The future of the world's biodiversity is closely linked to the strength of the global protected areas network, in terms of both its spatial configuration and its habitat quality. However, there is a large gap between the current level of investment in biodiversity conservation and the estimated funding that is needed. This gap is particularly extreme in the tropics. The largest share of the world's biodiversity is concentrated in a relatively small number of tropical countries where poverty is closely linked to resource degradation, while economic motivations to halt biodiversity loss are lacking. Since the establishment of the Convention on Biological Diversity in 1992, governments in the North have largely structured their biodiversity and conservation assistance according to this framework. In this, and several other international agreements, industrialized countries committed themselves to make substantial contributions to the financing of biodiversity conservation in developing countries. However, these processes have not generated sufficient financial resources or political will to slow biodiversity loss.

This report aims at evaluating financing mechanisms in support of protected areas in developing countries, which serve to transfer money for conservation from the North to the South, and identifying the scope for new financing mechanisms in support of protected areas in the South, which might help to close the gap for protected area financing.

The emphasis in this report lies on financing mechanisms in which governments of industrialized countries can play a role. The evaluation included donor investments through bilateral and multilateral mechanisms, property rights approaches (conservation easements, conservation concessions, support to community-based conservation), multi-actor institutional arrangements (debt-for-nature swaps, conservation trust funds, Payments for Environmental Services) and new international payment regimes (tax on international timber trade, carbon tax, emissions trading and taxes in relation to aviation and shipping, a Currency Transaction Tax on international financial transactions), and reallocation of perverse subsidies in agriculture and forestry towards conservation.

Bilateral and multilateral aid remain the largest sources of external finance for protected areas. Grants for biodiversity conservation by international donor agencies peaked at the 1992 Rio de Janeiro Earth Summit, but then experienced a steady decline over the past decade. Recently however, the total aid volume has picked up and shows an increasing trend. In order to make sure that this will lead to increased expenditure in support of protected areas, it is recommended to direct a larger share of bilateral development cooperation funds to biodiversity conservation, to spend a fixed percentage of Gross National Product on biodiversity conservation as part of overall donor investments, and to address protected area funding more explicitly in the process of implementation of the Millennium Development Goals and in Poverty Reduction Strategies.

Property rights approaches are mechanisms to spend money for conservation. Of the property rights approaches evaluated, financial support to community-based conservation is an important option. Essential conditions are to recognise the legal rights of indigenous peoples over their territories and secure land tenure rights of local communities, and to strengthen the capacities of local communities involved in conservation, while respecting their cultural and social values. The area under community-based conservation is large.

Innovative multi-actor arrangements are promising and have demonstrated capability to raise new funds for protected areas. For example, debt-for-nature swaps have an important potential in raising money for biodiversity conservation additional to Official Development Assistance.

Conservation trust funds have a strong potential to provide long-term financing and are an important means of bundling funds from different sources and of decentralizing them. Finally, programmes and projects of Payments for Environmental Services (PES) are increasingly being applied to compensate private landowners for restrictions on land use. In turn for environmental services provided by (semi)natural ecosystems, PES can financially support management of buffer zones and ecological corridors, and nature reserves managed by local communities and indigenous peoples.

The report discusses the scope, advantages and limitations of different multi-actor arrangements and identifies areas for improvement for each of these. Although the volume of money raised and spent through these mechanisms has increased over the last decade and will probably continue to increase, the amount of additional money raised addresses only a very small share of the shortfall in funding for an effective global protected area network. New approaches are therefore necessary to close the financing gap.

Reallocation of perverse agricultural and forestry subsidies to conservation has the potential to generate considerable amounts of money but this requires strong political will and international cooperation. It is therefore considered a long-term option. The possibility of reallocation of EU agricultural subsidies to conservation is an exception as this could be implemented within a few years time.

This report urgently recommends investigation of the potential for increasing revenues by designing and implementing new and innovative environmental tax schemes at the international level:

- Regulative system for international timber trade. Revenues of a tax on timber would be distributed by international institutions towards forest protected areas.
- Carbon taxation systems. Taxes can be introduced in sectors currently not covered under the Kyoto Protocol: aviation and maritime shipping. Taxes can be applied to aviation and maritime transport fuels, use of air space or sea straits, or airline ticket sales.
- Currency Transaction Tax on international financial transfers.

The revenue generated by new taxation systems, including taxes on timber trade, carbon taxation and the proposed Currency Transaction Tax on international financial transactions, could contribute to offsetting the gap between conservation monetary needs and current expenditure. These tax schemes should be viewed as additional sources of income, rather than a replacement for current multi and bilateral donor mechanisms. Carbon taxes in relation to aviation and shipping (also considering other types of emissions and pollution), and timber trade taxes would have the largest environmental impact whilst having intermediate potential to generate additional resources. The Currency Transaction Tax would probably raise most money and discourage destabilising speculative currency transactions. Revenue from taxes would have to be clearly earmarked for protected areas to have direct environmental benefit. The political will required to set up new taxation regimes and agree on appropriate international institutional arrangements can be considerable, in particular if introduced regionally or globally.

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## Acronyms and Abbreviations

AIJ	Activities Implemented Jointly
BOS	Borneo Orangutan Survival Foundation
CAEP	Committee on Aviation Environmental Protection
CBD	Convention on Biological Diversity
CDCF	Community Development Carbon Fund (of the World Bank)
CDM	Clean Development Mechanism
CI	Conservation International
COP	Conference of Parties (to the CBD)
CRS	Creditor Reporting System (of OECD)
CO <sub>2</sub>	Carbon dioxide
DAC	Development Assistance Committee (of OECD)
DFID	Department for International Development of the UK
DGIS	Directorate-General for International Cooperation of the Netherlands (‘Directoraat-Generaal Internationale Samenwerking’)
EAI	Enterprise for the Americas Initiative
EIA	Energy Information Administration
EC	European Community
EU	European Union
FAO	Food and Agriculture Organisation
FAN	Ecuador National Environmental Fund (‘Fondo Ambiental del Ecuador’)
FERN	EC Forest Platform
FONAFIFO	National Forestry Finance Fund of Costa Rica (‘Fondo Nacional de Financiamiento Forestal’)
FONAG	National Water Fund of Ecuador (‘Fondo Nacional del Agua’)
FSC	Forest Stewardship Council
FUNDESNA	Protected Areas Fund of Bolivia (‘Fundación para el Desarrollo del Sistema Nacional de Áreas Protegidas’)
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GTZ	German Organisation for Technical Cooperation (‘Deutsche Gesellschaft für Technische Zusammenarbeit’)
HIPC	Highly Indebted Poor Countries
HM Treasury	Her Majesty’s Treasury, UK
ICAO	International Civil Aviation Organization
ICDP	Integrated Conservation and Development Project
IDA	International Development Association (of the World Bank)
IFF	International Finance Facility
IMF	International Monetary Fund
IMO	International Maritime Organisation
IPCC	International Panel on Climate Change
IUCN	World Conservation Union
LULUCF	Land Use, Land-Use Change and Forestry
MDG	Millennium Development Goal
NGO	Non Governmental Organisation
NTFP	Non-Timber Forest Product
OCIC	Costa Rican Joint Implementation Office (‘Oficina Costarricense de Implementación Conjunta’)
ODA	Official Development Assistance

OECD	Organisation for Economic Cooperation and Development
PA	Protected Area
PACT	Belize's Protected Areas Trust Fund
PASOLAC	Programme for Sustainable Agriculture on Sloping Lands in Central America ('Programa para la Agricultura Sostenible en Laderas de América Central')
PCF	Prototype Carbon Fund (of the World Bank)
PES	Payment for Environmental Services
PPAFD	Pilot Programme of Direct Forest Aid of Guatemala ('Programa Piloto de Apoyos Forestales Directos')
RedLAC	The Latin American and Caribbean Environmental Funds Network ('Red de Fondos Ambientales de Latinoamérica y el Caribe')
TNC	The Nature Conservancy
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development
VAT	Value Added Tax
WRI	World Resources Institute
WSSD	World Summit on Sustainable Development
WTO	World Trade Organisation
WWF	World Wildlife Fund

# 1 Introduction

The future of the world's biodiversity is closely linked to the strength of the global protected areas network, in terms of both its spatial extension and its habitat quality. The Millennium Ecosystem Assessment (2005) reveals that approximately 60% of the ecosystem services that support life on Earth – such as fresh water, fish production, air and water regulation, and the regulation of regional climate, natural hazards and pests – are being degraded or used unsustainably. The negative impacts of this degradation are expected to grow significantly worse in the next 50 years.

In particular the expansion of agriculture for commodity production is an important cause of habitat conversion (Nielsen *et al.*, 2005). In developing countries, the area dedicated to soybean, oil palm, cocoa and coffee has doubled over the past three decades, from 50 million to 100 million ha. Furthermore, during the coming decades a strong growth in the demand for beef is expected, which will result in the loss of natural ecosystems due to expanding pasture on one hand, and an increasing area under cultivation of feed grains such as soybean on the other (Kaimowitz *et al.*, 2004). Many of these changes in land use are taking place in tropical regions with a high biodiversity, which underlines the importance of direct protection measures.

Impoverishment and environmental degradation often go in hand in hand. The broader context of environmental resource management and sustainable development according to Millennium Development Goal 7 (MDG 7) is therefore highly relevant to financing of protected area implementation. The Millennium Ecosystem Assessment (2005) states that “Any progress achieved in addressing the goals of poverty and hunger eradication, improved health, and environmental protection is unlikely to be sustained if most of the ecosystem services on which humanity relies continue to be degraded”. The study specifically indicates that the ongoing degradation of ecosystem services is a major obstacle to the Millennium Development Goals agreed to by the world leaders at the United Nations in 2000.

Financing is crucial to secure any conservation program's success. Several studies indicate that there is a large gap between the current level of investment in biodiversity conservation and the estimated funding that is needed, although the estimates vary considerably among different sources. James *et al.* (1999:17) found that average budgets for protected areas in developing countries are only around 30% of the minimum amount required for conserving those areas. Balmford and Whitten (2003) also conclude that the gap between current expenditure and the funding needed for conservation is particularly extreme in the tropics. The largest share of the world's biodiversity is concentrated in a relatively small number of tropical countries that tend to be among the world's poorest. The natural resources are often under high pressure in these countries, while economic and political motivations and possibilities to halt biodiversity loss are lacking.

Although most species occur also outside protected areas, the protected area network plays three vital roles with respect to biodiversity conservation (WWF, 2004):

- Maintaining species and ecosystems that cannot survive outside natural or near natural conditions
- Providing an “ark” for threatened species in those places where changes in land use have been abrupt and wide ranging, to allow wild species a breathing space until a combination of restoration and sustainable management creates more suitable habitat
- Creating “living laboratories” where scientists and conservationists can learn more about how ecosystems work and therefore how to accommodate biodiversity in other areas.

These are important reasons why protected areas are the corner stone of most national biodiversity conservation strategies. However, protected areas are also important as providers of other environmental services, some of these having considerable economic value (Balmford *et al.*, 2003; Costanza *et al.*, 1997). For example, ecosystems of upper watershed areas are often conserved because of the key role they play in securing water quality and regulating water flows. Recently, the function of sink and stock of carbon has been used as an additional motivation to set aside land for conservation. The maintenance of cultural and spiritual values may also play a role.

According to data of the UNEP World Conservation Monitor Centre, more than 12% of the global land surface now has a protected area status (Chape *et al.*, 2005). Most of these conservation areas were set up during the 20<sup>th</sup> century. Not all biomes are equally represented, for example broadleaved temperate forests and dry lands are underrepresented. In addition, conservation efforts in tropical forests should be intensified, as these are among the world's most threatened ecosystems, in which a large share of global terrestrial biodiversity is concentrated (see, e.g. UNEP, 2002).

On a more detailed scale level, Dudley & Pressey (2001:2) indicate some major problems in the location and design of existing protected areas. In the first place, there is bias in the selection of protected areas, which results in the under-representation of landscapes useful for people (e.g. fertile soils highly suitable for agriculture) and the over-representation of landscapes that are remote or unsuitable for commercial or subsistence activities (e.g. bare lands consisting of ice or rocks). Secondly, there are design shortcomings in individual protected areas: these are often too small, too isolated or have the wrong shape, which make them more susceptible to external disturbances.

Improvement of the effectiveness of protected area management obviously requires major investments, in particular in developing countries (Bruner *et al.*, 2003; 2004). The so-called 'paper parks' are common: areas that received a protection status but subsequently suffer a lack of resources for implementation of appropriate conservation measures. Bruner *et al.* (2001:125) found that "the majority of parks are successful at stopping land clearing, and to a lesser degree effective at mitigating logging, hunting, fire, and grazing. Park effectiveness correlates with basic management activities such as enforcement, boundary demarcation, and direct compensation to local communities, suggesting that even modest increases in funding would directly increase the ability of parks to protect tropical biodiversity."

In addition, protected areas will have to be newly created, expanded and connected in support of the development of a representative global network of protected areas. Thus, the proportion of global land surface covered by protected areas appears to be a poor indicator in relation to the work that remains to be done in order to increase the effectiveness of the global protected area network in protecting the world's biodiversity.

### ***Funding shortfall***

James *et al.* (2001) found that an annual amount of around US\$  $6 \times 10^9$  is spent each year on protected areas world-wide, with US\$  $3.5 \times 10^9$  spent within the United States alone. According to James *et al.* (2001) an extra annual US\$  $2.3 \times 10^9$  is needed to improve and secure the effective management of the existing protected areas. The majority of this need is concentrated in developing countries (see, e.g. Wilkie *et al.*, 2001).

Balmford *et al.* (2002) estimate that the annual costs to create and manage a representative global system of marine and terrestrial protected areas are between US\$ 30-35 x 10<sup>9</sup> and at least US\$ 20 x 10<sup>9</sup> for terrestrial protected areas. Balmford & Whitten (2003: 247) argue that particularly long term financing is needed.

A comprehensive global network of protected areas could provide estimated financial returns of between US\$ 4,400-5,200 x 10<sup>9</sup> in terms of annual value of goods and services, such as clean water, food security, medicine, disaster prevention and climate regulation.

The annual costs of effective conservation vary widely across the globe. Variation in the costs per unit area is related to indices of local development. In less developed regions, costs of conservation are much lower, while the benefits of conservation tend to be higher due to higher concentrations in species diversity. Thus, the benefit-to-cost ratio of conservation is far higher in less developed regions (Balmford *et al.* 2003). Governments of developed countries often overlook the possibility of these so-called biodiversity “bargains” in developing countries (James *et al.*, 2001:45; Balmford *et al.*, 2003). With the same amount of money, it is often possible to conserve a much larger area and protect much more biodiversity within a developing country, than if the money would be spent on conservation in a developed country.

James *et al.* (1999:10) suggest that in some regions that are very rich in biodiversity, such as Central Africa and Indochina, budgets are less than 3% of the global average per hectare. At the same time, financial and political crises in many developing countries have led to a decline of more than 50% in budgets for managing protected areas over the last decade (Spiegel in Terborgh *et al.*, 2002:364).

Balmford & Whitten (2003:240) distinguish two types of costs involved in conservation of protected areas:

1. Active costs: Immediate costs of conservation activities, including costs of acquiring or leasing land, managing or restoring habitats and populations and enforcing restrictions to land use.
2. Passive costs: Indirect costs, including opportunity costs that arise when harvesting wild populations or converting wild habitats is restricted, as well as the costs of damage by animals originating in conserved areas. These costs are mostly borne by local communities.

Forced relocation of local communities as part of so-called ‘fines-and-fences’ approaches occurred frequently in the past and has been criticized. In many cases, local communities have yet not seen financial compensation for the establishment of protected areas on their land. Nowadays, community-based and participatory approaches to conservation, integrating local development goals, have become common. These approaches however do not guarantee sufficient financial compensation for restrictions on land use or damage to agriculture, nor the transfer of revenues of protected areas to local communities.

### ***International commitments to fund biodiversity conservation***

The outline above clearly indicates that the funding shortfall faced by countries in the South to finance their contribution to an effective global protected areas network, is considerable. Since the establishment of the Convention on Biological Diversity in 1992, governments in the North have largely structured their biodiversity and conservation assistance based on its framework and it remains an important instrument driving international biodiversity policy.

However, as argued by Lapham & Livermore (2003), it has fallen short of generating the financial resources or political will necessary to slow biodiversity loss. Box 1 lists the international conventions and agreements related to protected areas.

Bilateral and multilateral organisations have supported biodiversity conservation in developing countries for more than 25 years. Over the years, various international agreements have served as a framework guiding these investments. Early agreements of the 1970s and 1980s included several species-specific wildlife conservation treaties, the **Convention on International Trade in Endangered Species (CITES)**, and the **World Heritage Convention**. The first attempts at a broad international framework for biodiversity protection included the 1980 **World Conservation Strategy** and the 1982 **World Charter on Nature**. The **Ramsar Convention** or the **Convention on Wetlands** was signed in 1971 in Ramsar, Iran and provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.

The **Convention on Biological Diversity** was established in 1992 at the Rio Earth Summit as the primary mechanism for government coordination to address the threats to biodiversity and channel resources to curtail its loss. The CBD has three primary objectives: (1) conservation of biological diversity, (2) sustainable use of the components of biological diversity, and (3) fair and equitable sharing of the benefits arising out of the utilization of genetic resources (CBD 1992 Article 1). All together, 188 nations have become formal parties of the CBD agreement, the most notable exception being the USA.

To achieve these objectives, the CBD details a number of methods, including, among others: identification and monitoring, *in situ* and *ex situ* conservation, sustainable use, incentive measures, research and training, and public education. Of particular relevance to this report are Article 20, which commits developed country Parties to providing “new and additional financial resources” to enable developing country Parties to meet the costs of implementing the CBD, and Article 21, which formally designates the GEF as the CBD’s financial mechanism. Beyond support for the GEF, the CBD also encourages developed countries to provide financial resources for Convention implementation through bilateral, regional, and other multilateral channels (CBD 1992 Article 20.3).

**Agenda 21** was another output of the Rio Earth Summit in 1992 that recognised the importance of biodiversity conservation. Agenda 21 serves as a blueprint to guide the world towards sustainable development. Chapter 15 of the Agenda calls on Parties to “improve the conservation of biological diversity and the sustainable use of biological resources, as well as to support the CBD” (UN, 1992).

At the 2002 **World Summit on Sustainable Development (WSSD)** in Johannesburg, governments once again underscored the importance of donor country support for biodiversity in developing countries. The Summit’s final declaration stated, ‘a more efficient and coherent implementation of the three objectives of the Convention and the achievement by 2010 of a significant reduction in the current rate of loss of biological diversity will require the provision of new and additional financial and technical resources to developing countries’ (UN, 2002).

More than 2,300 participants attended the seventh **Conference of the Parties (COP-7) to the CBD**, which was held from 9 to 20 February 2004 in Kuala Lumpur, Malaysia.

After considerable debate, COP-7 also agreed on a programme of work on protected areas that has, as one of its goals, the establishment of a comprehensive, effectively managed, and ecologically representative global network of national and regional systems by 2010 for terrestrial areas and by 2012 for marine areas. Both decisions invite Parties to base implementation on national and sub-national needs and to identify priorities according to their specific circumstances and conditions.

**Box 1. International conventions and agreements related to protected areas.**

### ***Aim***

This report has a twofold aim:

- 1) to evaluate financing mechanisms in support of protected areas in developing countries, which serve to transfer money for conservation from the North to the South; and
- 2) to identify the scope for new financing mechanisms in support of protected areas in the South, which may help to close the gap for protected area financing.

### ***Scope***

Only those financing mechanisms are dealt with, in which governments of industrialized countries can play a role as a key actor. This restriction implies that mechanisms with a strong involvement of the private sector are outside the scope of this report.

Furthermore, the report focuses primarily on financing mechanisms in support of the protection of terrestrial ecosystems. All categories of protected areas according to the IUCN classification are considered.

## 2 Bilateral and multilateral mechanisms

This chapter deals with trends in financing of protected areas through bilateral and multilateral mechanisms. Details on the institutional set-up of these mechanisms are included in Annex 1.

Table 1 summarizes some important differences between multilateral funding and bilateral funding to biodiversity conservation, as identified by Lapham & Livermore (2003).

BILATERAL	MULTILATERAL
<ul style="list-style-type: none"> <li>• Donors focus their assistance on specific countries and regions, whether because of economic and political interests, perceived need, historical ties, or geographic proximity.</li> <li>• Developed country governments often have well-established relationships with particular developing countries that provide a solid basis for dialogue and co-operation. As donor country agencies build knowledge and experience about local conditions, the result can be more effective development assistance programs targeting specific sectors or projects.</li> <li>• Bilateral assistance tends to be somewhat less bureaucratic and more efficient than multilateral support. One reason is that bilateral strategies are based on the priorities of two nations working in co-operation rather than a whole host of countries trying to reconcile differing agendas. Bilateral assistance is generally subject to fewer restrictions than those imposed by larger funding institutions.</li> </ul>	<ul style="list-style-type: none"> <li>• Resources are spread across a broad geographic scale. While distributions from country to country or continent to continent may vary somewhat, multilateral donors strive for a wider geographic spread than their bilateral counterparts.</li> <li>• Assistance generally flows in relatively large blocks. GEF projects and World Bank loans can run into the tens of millions of dollars, though there are programs that manage to release funding in smaller increments.</li> <li>• Multilateral funding priorities by definition reflect the consensus of multiple nations working together. The biodiversity priorities of the GEF, for example, are largely set through the Convention on Biological Diversity.</li> <li>• Multilateral funding can be inflexible and difficult to obtain. Also, in large part due to safeguards such as rigid auditing and reporting requirements, approved grant funds may flow in an inefficient manner, hampering project effectiveness.</li> </ul>

**Table 1. Differences between multilateral funding and bilateral funding to biodiversity conservation.** Source: Lapham & Livermore, 2003.

In view of differences in focus and geographical distribution of the allocation of aid between bilateral and multilateral donors, there is a clear need for the coordination of mutual efforts.

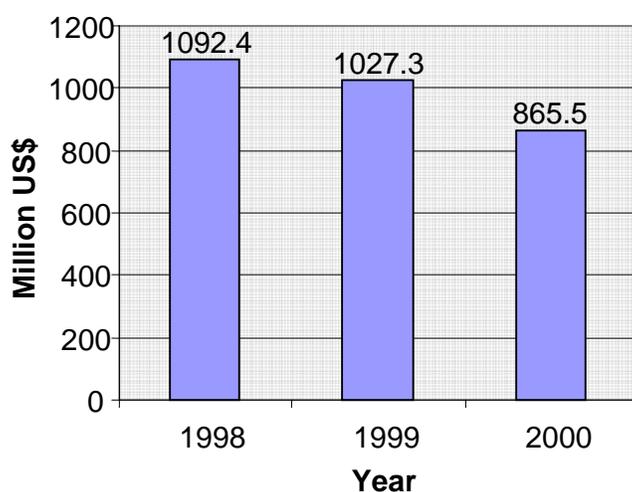
### 2.1 Bilateral mechanisms

Donor governments do not systematically report on their biodiversity assistance. Biodiversity assistance is often part of broader development programs, which makes it difficult to isolate it from other types of funded activities. This becomes apparent from the data reported by donor nations to the OECD (Organisation for Economic Cooperation and Development). Member nations reporting to OECD's Creditor Reporting System (CRS) assign their project-level assistance to sectors (e.g. education, agriculture and environment). Within these sectors, projects must be further specified with purpose codes.

The ‘biodiversity’ purpose code within the environmental sector is defined as ‘including natural reserves and actions in the surrounding areas; other measures to protect endangered or vulnerable species and their habitats (e.g., wetlands preservation)’ (OECD, 2005). However, countries often omit this purpose code, resulting in a possible under-representation of conservation investments.

The OECD also carried out a ‘Rio Markers’ study to assess total funding in support of the CBD and the other Rio Conventions between 1998 and 2000. For this purpose, the OECD’s Development Assistance Committee and the CBD Secretariat developed a ‘biodiversity marker’. Programs corresponding to this marker focus either on the protection of ecosystems or genetic resources or remedying existing environmental damage, or on the integration of biodiversity concerns with recipient countries development objectives. As part of the biodiversity marker study, donors reported the ‘biodiversity related’ aid they had provided in a range of sectors such as environmental protection, forestry, fishing, water supply and agriculture. With this method, only the total project funding amounts were reported, leaving little clarity about the actual amounts spent on conservation practices (see also Lapham & Livermore, 2003:17). Furthermore, the OECD has little capacity to verify or improve the data provided by the member countries. It is thus difficult to get a balanced impression on biodiversity conservation spending through Official Development Assistance (ODA) based on OECD data.

ODA activities targeting CBD goals have been reported on between 1998 and 2000. Nineteen DAC members reported a total of 5,439 individual biodiversity-related aid activities in 1998-2000. The total figures reported were 1.09, 1.03 and 0.87 x 10<sup>9</sup> US\$, respectively (see Figure 1). The annual average is of US\$ 995.1 million, or 2.7% of total bilateral official development assistance. Only 16.5% of the reported assistance is spent on ‘biodiversity-only’ projects, while 60% of the projects were identified to correspond to “thematic areas and cross-cutting issues of the Convention”. The biodiversity-related aid seems to be fairly evenly distributed between Africa, Asia and Latin America. It is important to note that it remains unclear which part of the resources spent on the ‘biodiversity-only’ projects actually goes to protected areas.



**Figure 1. Biodiversity-related aid, commitments 1998-2000, by 19 members of the OECD Development Assistance Committee (Source: OECD, 2002).**

The results from the CRS database search and ‘Rio Markers’ study by OECD provide an estimate of the range of conservation funding in developing countries by the six major donors (see Table 2).

It is remarkable that the aid with the CRS ‘biodiversity’ purpose code of the six major donors also amounts to 16% of the total aid in support of the CBD objectives, as reported in the ‘Rio Markers’ study.

We agree with the conclusion of Lapham & Livermore (2003) that inconsistent reporting on and expanding definitions of biodiversity assistance prevent an accurate assessment of overall funding. This impedes the creation of an effective system for collecting and sharing information and hampers efforts to make informed investments.

Country	OECD Creditor Reporting System, ‘biodiversity’ purpose code data (US\$ x 10 <sup>6</sup> )	‘Rio Markers’ study, Aid targeting CBD objectives (US\$ x 10 <sup>6</sup> )
France	7.7	44.7
Germany	33.2	275.6
Japan	5.6	144.1
The Netherlands	20.3	146.9
United Kingdom	2.1	23.9
United States	44.7	84.2

**Table 2. Average annual bilateral ODA of six countries reported to the OECD, listing the expenditures with a ‘biodiversity’ purpose code; and aid classified as in support of the CBD 1998-2000 (in millions of US\$). Source: Lapham & Livermore, 2003.**

#### *Recent trends in bilateral assistance*

Over the past decade, there have been major changes in the way bilateral aid is organized. Development agencies are increasingly applying sector-wide approaches. Instead of designing and implementing projects on behalf of recipient countries, their role has changed towards providing financial support to sector programmes designed by the host countries themselves, and to monitor these programmes. Recipient countries have, at least formally, more autonomy in taking funding decisions according to their contribution to the overall strategy formulated for the agriculture or forestry sector for example. Biodiversity conservation does however not represent an independent sector. At the same time, bilateral development agencies emphasize poverty alleviation as being their primary goal, with biodiversity as a component of their work programmes.

The decentralization process and the growing emphasis on poverty alleviation have contributed to the “mainstreaming” or inclusion of environmental issues and biodiversity conservation into development activities of a range of sectors. Health, education, and agriculture or rural development, tend to be the sectors chosen by recipient countries as targets for bilateral aid investments. According to Lapham & Livermore (2003), the negotiated development assistance programmes insufficiently reflect biodiversity concerns and seem to leave little room for conservation actions. Although often poorly defined, sustainable exploitation of natural resources is frequently promoted over investments into conservation.

Furthermore, development agencies are also decentralizing responsibilities to embassies, field level offices, and local counterparts.

The development agencies normally do not support biodiversity conservation in their own countries and biodiversity experts are often not available at the embassies and other national level offices.

Although biodiversity-related bilateral aid seems to be fairly evenly distributed over Africa, Asia and Latin America, most development agencies have a target group of developing countries to which they provide development assistance. Over the past decade, some donor countries have limited this target group of recipient countries according to scores on social and economic performance indicators, or the existence of historical ties. Environmental concerns have in most cases not played a significant role in the selection of recipient countries.

Lapham & Livermore (2003) provide examples of changes in bilateral aid programmes of major donor governments. In several development agencies, the topic has a lower profile than prior to a decade ago. British, German, and Japanese government's spending on biodiversity peaked in the late 1990s and then declined. These shifts in priorities have led to overall declining resources for projects with a major focus on protected areas. Germany, The Netherlands and the United States are practically the only bilateral donors that still spend large sums on protected area projects (CBD, 2005a).

## **2.2 Multilateral mechanisms**

### ***Global Environment Facility (GEF)***

The Global Environment Facility has become the most significant financing institution for biodiversity conservation and has dedicated US\$ 1.7 x 10<sup>9</sup> (about 40% of its funding) to projects and enabling activities within the biodiversity focal area (Lapham & Livermore, 2003).

In our recent review of GEF's public project database (excepting the Small Grants Programme) we found a total of 692 projects with a total amount of US\$ 1.93 x 10<sup>9</sup> being allocated to projects with biodiversity as its focal area (GEF, 2005). Absolute funding for biodiversity increases from the second to the third replenishment. In the third replenishment period of GEF, the biodiversity focal area receives US\$ 880 million. Since its inception in 1992, GEF has provided US\$ 1.2 x 10<sup>9</sup> for more than 1,000 protected areas (CBD, 2005b).

The Small Grants Programme is a specific programme of GEF that supports activities of non-governmental and community-based organizations in developing countries. Between 1992 and 2004, GEF has committed US\$ 175.2 million to this programme, leveraging US\$ 105.8 million from other partners (UNDP, 2005). The Small Grants Programme spends about 60% on its biodiversity focal area (UNDP / GEF Small Grants Programme, 2003). The public database showed 209 projects with the key-word "protected area", while the total number of projects with biodiversity as its focal area accounted for 3,621 (UNDP, 2005).

### ***World Bank***

Between 1988 and 2005 the World Bank Group has approved and (co-)funded over 240 projects supporting protected areas (CBD, 2005b). These projects wholly or partially support protected areas in more than 90 countries through national projects, and some regional and global projects. The support includes "investments in institutional strengthening, innovative governance arrangements and sustainable financing mechanisms" (World Bank, 2003:1). This biodiversity portfolio represents more than US\$ 4 x 10<sup>9</sup> investment. Lending for biodiversity constitutes about half of the investments.

Not all of this biodiversity funding has been spent on protected areas. Apart from supporting the establishment of new protected areas and strengthening of protection and management of existing ones, projects focus(ed) on “the support of ancillary activities, such as inventory and research, education and public awareness, buffer zone activities and biological corridors; sustainable financing mechanisms; ecotourism institutional strengthening and new government arrangements including community management and Indigenous and private reserves; control of invasive alien species; and social inclusion through local participation in management and direct linkages to poverty alleviation of poor communities” (World Bank, 2002:3). The World Bank evaluation report of 2003 confirms that all but one of the 233 biodiversity projects carried out till then contained other activities than protected area (PA) establishment or management (World Bank, 2003). Many of these are integrated projects of which nature conservation is only a component. The report does not indicate how much financial resources are actually spent on conservation activities.

Table 3 shows the results of a query into the World Bank’s project database. To date, the number of projects with “biodiversity” as a key word has grown to 342. However, only 66 projects (19%) have protected areas as a key word and thus as an important component of their activities.

Query word(s)	Number of projects	Remarks
”conservation”	357	
”biodiversity”	342	
”biodiversity conservation”	151	
”forest conservation”	64	Mostly integrated conservation and development projects
”protected area” or “protected areas”	66	

**Table 3. Results of a query into the World Bank project database**  
(<http://www.worldbank.org>, “Projects & Operations”).

### *European Community*

Although representing the major international donor in terms of overall development aid, the European Community (EC) has a poor record in terms of environmental programmes. The EC Forest Platform (FERN, 2002) reviewed 16 Country Strategy Papers and two Regional Strategy Papers to evaluate the allocation of EC aid within poor countries with a relatively high forest cover (21 to 90% of their land surface). According to the situation in 2002, most of the EC aid spending would fund new roads and large macro-economic projects. Out of the €1.66 x 10<sup>9</sup> committed through the evaluated Country Strategy Papers, €64 million or less than 4% goes to forests and the environment. The construction of new roads is expected to result in ecosystem degradation and forest loss in many cases, while the road projects do not properly address the potential environmental impacts. There is no information available as to the money the EC spends on protected areas.

The European Community is committed to reach a collective ODA target of 0.7% of GDP by 2015, with an intermediate target of 0.56% by 2010. This implies almost doubling the European aid volume. ODA spent collectively by the EC will increase 20 x 10<sup>9</sup> € per year by 2010 (about US\$ 24 x 10<sup>9</sup> at current exchange rates). The intermediate target is a strengthened commitment in comparison with the earlier agreed Monterrey targets of 2002 and was announced as an EC contribution to the Millennium Development Goals (European Commission, 2005). In 2006, the EC ODA commitments amount to €46 x 10<sup>9</sup>; increasing to €66 x 10<sup>9</sup> in 2010 (0.56% target); and reaching €90 x 10<sup>9</sup> in 2015 (0.7% target).

The EC deals with the environment as a cross-cutting issue that should be incorporated in all development programmes and has no specific funds for biodiversity conservation in the South. The EC committed itself to take measures in order to reduce the rate of biodiversity loss by 2010. This is to a large extent translated into action within Member States. However, the EC is currently developing an action plan on international public goods, which may include a separate budget line for biodiversity conservation. The EC announced “enhanced and earmarked funding for biodiversity” (CBD, 2005b).

### ***Recent trends in multilateral assistance***

Over the last decade, poverty reduction has become the overriding priority of the World Bank, UN agencies delivering development assistance and many other multilateral aid agencies. As a result, biodiversity funding is increasingly framed in terms of its relation to poverty reduction. Biodiversity is more often mainstreamed into other development sectors and sustainable use is promoted over short-term conservation investment. This trend is similar to the recent changes in bilateral funding described above. The newest phase of GEF funding will concentrate more on projects outside protected areas than before.

## **2.3 Scope of ODA in support of protected areas**

Bilateral and multilateral aid represent the most important external source of funding for protected areas. The importance of international donor funding to conservation in developing countries is confirmed by a survey of biodiversity investments in Latin America (Castro & Locker, 2000). Multilateral and bilateral agencies provided close to 90% of all external funding for biodiversity conservation in the period between 1990 and 1997, followed by NGOs (5.8%) and private foundations (3.8%). 35% of the total amount of US\$ 3.26 x 10<sup>9</sup> was spent on protected areas specifically (Castro & Locker, 2000:21), thus accounting for US\$ 1.14 x 10<sup>9</sup>. Hence, it can be concluded that for the Latin American region on average 143 million of external funding was spent on protected areas annually between 1990 and 1997. The authors note that smaller donors occupy an important niche, because “they are able to support, in a flexible manner, innovative and higher risk projects”. They may also be able to influence the direction of conservation investments of larger donors.

As Lapham & Livermore (2003:7) point out, funding by donor governments is important since it can target the poorest countries; it often fosters environmental policy dialogue, while it also attracts co-financing by other sources.

However, grants for biodiversity conservation by international donor agencies such as GEF, USAID, DGIS and GTZ peaked at the 1992 Rio de Janeiro Earth Summit, but have since then experienced a steady decline (James *et al.*, 1999:4). The total aid volume of the EC recently increased substantially and will continue to increase as a result of the agreed Monterrey targets of 2002 and additional efforts in the light of the Millennium Development Goals. It remains to be seen whether this will also result in increased expenditure in support of protected areas. If the EC effectively enhances and earmarks funding for biodiversity conservation as recently announced (European Commission 2005c), this would - in combination with the expected increase in total aid volume - lead to a significant increase in the level of European support to protected areas.

Financing protected areas has become more complex. Over the last decades a shift has taken place from project support to program and budgetary support. (Gutman, 2003). There is a tendency to use multiple sources of financing and new financing options that are more complex than traditional ones, often on the basis of multi-actor arrangements.

The flows of money among donor agencies, intermediary organizations and recipient organizations tend to be channelled through complex networks. This complexity hampers the evaluation of the effectiveness of these investments. A typical example of such financial flows is when money for conservation activities in the South is transferred by the following (intermediary) institutions, before it may benefit on-the-ground biodiversity protection: 1) a bilateral donor government; 2) GEF; 3) the World Bank, UNEP or UNDP; 4) the government of a recipient country, or, alternatively, an international conservation NGO; 5) an environmental fund at national or regional level, including conservation trust funds; 6) local organizations such as Community Based Organisations involved in conservation or local conservation NGOs. Sometimes, the European Commission acts as an additional intermediary agency. Major NGOs often act as implementing agency for conservation activities funded by bilateral and multilateral donors, however figures on these expenditures are lacking.

The stepwise channelling of financial resources among many different institutions probably leads to a considerable loss of resources due to the administrative costs of each institution involved. Furthermore, it can be expected that the capability of such complex payment schemes to respond to urgent conservation needs in a timely and flexible way, is strongly reduced.

## **2.4 Expanding ODA by means of innovative financing mechanisms**

There is a growing consensus among world leaders that traditional mechanisms of ODA are not sufficient to meet the immediate needs of the developing world as expressed in the Millennium Development Goals (see Atkinson, 2004). For example, the Presidents of Brazil, Chile, France and Spain committed themselves to search for new financing mechanisms aimed at increasing the aid volume, which resulted in an evaluation report prepared by a technical group representing the four countries (Rapport Quadripartite, 2004). This is further elaborated in Chapter 5. In addition, the G8 countries proposed to cancel outstanding debt of eligible Highly Indebted Poor Countries. What this implies in terms of the potential generation of revenues from debt-for-nature swaps is discussed in Chapter 3.

In January 2003, the government of the UK launched a proposal for an International Finance Facility (IFF). The IFF is designed to frontload aid to help meet the Millennium Development Goals and aims at an increase in aid of at least US\$50 billion per year (HM Treasury & DFID, 2005). On the basis of donors' long-term commitments, which are legally binding, the IFF would leverage money from international capital markets by issuing bonds. Future aid flows should repay bondholders. Financial resources will be allocated through existing bilateral and multilateral mechanisms.

The UK and France will implement an air ticket solidarity levy (HM Treasury, 2005). The revenues will be partly used to finance health development projects. France and the UK will implement the International Finance Facility and intend to use part of the revenues from the air ticket solidarity levy for this purpose. The UK already has an air ticket levy, but will redirect it. The option of setting up international taxation schemes and using part to the revenues in support of protected areas is explored in Chapter 5.

To date, the process of implementation in relation to the Millennium Development Goals (see Sachs, 2005) has focused on fighting basic poverty and includes measures in the fields of education, health, access to water, trade and infrastructure development. Sustainable use of natural resources including conservation, as a basis for sustainable local livelihoods, has not received much attention so far.

If this trend continues, it cannot be expected that the IFF or other innovative mechanisms set up by international donors in the light of the Millennium Development Goals will disburse substantial resources in support of protected areas. What is important, however, is that there appears to be considerable political will to increase the current aid volume.

## **2.5 Conclusions**

Bilateral and multilateral aid are the predominant forms of external finance for protected areas that currently exist. A considerable amount of money comes from these sources.

Complex networks of flows of money between aid donor and recipient make it difficult to estimate how much is spent on biodiversity conservation as part of development aid. There are many projects on biodiversity, but the share of support allocated to protected areas remains unclear. The rough estimates that are available reveal large differences between major donors on how much is spent on biodiversity projects. After a period of decreasing ODA investments into biodiversity conservation, the total volume of ODA has started to increase. Whether this will result in additional funding for protected areas remains unclear.

### **3 Multi-actor institutional arrangements**

This chapter describes and discusses important institutional arrangements for funding of protected areas, involving multiple actors:

- Debt for Nature Swaps
- Trust funds
- Payments for Environmental Services

#### **3.1 Debt-for-nature swaps**

The Latin American debt crisis of the 1980s led to the invention of the debt-for-nature swap. This financial mechanism allows countries to spend money on nature conservation that would otherwise be used to repay their foreign debt. Debt-for-nature swaps create a link between external debt of a country and financing of conservation. An amount of debt is exchanged by the creditor for a financial contribution to conservation by the debtor country, in a voluntary transaction. There are two types of debt-for-nature-swaps: commercial and bilateral debt swaps (Spergel, 2004).

1. Bilateral debt reduction programs involve debt owed by the borrowing governments to the governments that make loans. The creditor government agrees to cancel a specific portion of the cancelled debt in exchange for financing of conservation by the debtor country in local currency.
2. Commercial debt-for-nature swaps involve debt owned by developing countries to international commercial banks. Major conservation organisations often buy the debts from creditors at considerable discounts and reach a subsequent agreement on the amount of money that the debtor government will spend on new conservation programs in exchange for the cancellation of the debt. This amount is higher than the amount paid by the conservation organisation. It is important to bear in mind that the willingness of banks or other creditors to sell debt owed to them at a substantial discount is the main condition to commercial debt-for-nature-swaps.

The key actors in debt-for-nature swaps are: debtors, creditors, conservation intermediaries, donors and beneficiaries (see also Conservation Finance Alliance, 2005).

Debtors are the borrowing governments in a bilateral debt for nature swap, or a private borrower or company in a commercial swap. Debtors may be motivated to get involved in debt-for-nature swaps by the political benefits of a swap and of funding conservation and sustainable development (Kaiser & Lambert, 1996) as well as by a financial interest in reducing their external debt obligations and loan payments.

Creditors are governments or private companies that make loans and usually hold the debt. Government creditors include central governments, government aid agencies or government export credit agencies. Commercial creditors are commercial banks, commercial suppliers (e.g. equipment) or other private creditors. Creditors are often willing to sell a loan for less than its original amount, usually expecting that a loan will not be repaid anyway.

Donors are typically developed country governments, private foundations and international conservation NGOs. In recent years, bilateral debt swaps have become more frequent and creditor governments now often donate portions of their debts. Major conservation NGOs such as Conservation International (CI), The Nature Conservancy (TNC) and World Wildlife Fund (WWF) have been involved in debt swaps, either as facilitators or as parties buying and cancelling debt in the case of commercial debt swaps.

Intermediary conservation organisations play a broker role in a three-party debt-for-nature swap and usually initiate and help negotiate the deal. They can be international non-profit organisations but also research institutes, United Nations agencies, private foundations or conservation trust funds. The beneficiaries of the debt-for-nature swap are local conservation NGOs, protected areas or NGO-controlled trust funds. These organisations help design, prioritise and implement the conservation funding.

Other actors frequently involved are ministries of finance, ministries of foreign affairs, bilateral assistance agencies, national parks agencies, and local conservation organisations as beneficiaries. The revenues generated by debt-for-nature swaps are often administered by national and local conservation trust funds (see also 3.2).

Kahn & McDonald (1995) suggest that debt-for-nature swaps may have a dual effect on deforestation. Not only is the financial agreement designed to preserve forests as part of the swap, but the reduction in debt may itself reduce the pressure to deforest, since debt may lead to more deforestation. However, it is argued this latter indirect effect is likely to be small.

Recent examples are debt-for-nature swaps arranged in Peru for about US\$ 11 million, in Belize for US\$ 10.7 million, and a debt swap currently being negotiated of approximately US\$ 10 million in Panama (TNC, 2005).

### **3.1.1 Bilateral debt-for-nature swaps**

Bilateral debt-for-nature swaps are the most common type of debt-for-nature swap. Usually, such transactions are based on debt restructuring agreements between the debtor and the donor governments under the Paris Club. The Paris Club is a group of 19 large international government creditors who try to find solutions to the payment difficulties that debtor countries experience. The creditor governments agree on a rescheduling of debt as a means of providing a country with debt relief, usually through a postponement or a reduction in debt service. Paris Club agreements need to contain a debt-swap clause for a debtor country to be eligible for debt-for-nature swaps that usually accounts for 10-20% of a maximum amount of the non-concessional claims of each individual author, while there is no limit for ODA loans (Conservation Finance Alliance, 2005).

There are two types of bilateral debt swaps, namely principal swaps and debt service swaps. Principal swaps involve the re-negotiation and reduction the principal or face value of a loan with a single upfront payment for conservation. A debt service swap involves the renegotiation of interest and principal payment over a negotiated period of time.

Creditor governments that have participated in debt for nature swaps include: Canada, Finland, Germany, the Netherlands, Switzerland and the U.S. Over 20 local conservation trust funds have been funded by bilateral debt-for-nature swap programs. Important debt conversion programs include the U.S. Enterprise for the Americas Initiative (EAI), the U.S. Tropical Forest Conservation Act and the Swiss Debt Reduction Facility. The resulting trust funds have boards that consist of representatives from both the creditor and debtor governments.

The US Tropical Forest Conservation Act is an example of a current bilateral debt-for-nature swap programme that promotes forest conservation in tropical developing countries. Between 1998 and November 2004, eight countries had negotiated debt reallocation deals that will generate more than US\$ 98 million for forest conservation.

The first debt-for-nature swap took place in 1987 between Conservation International and the government of Bolivia. In exchange for writing off US\$ 650,000 debt, the government committed US\$ 100,000 for the protection of the Beni Biosphere Reserve.

### ***Example of the Polish Ecofund***

The largest bilateral environmental debt swap to date was achieved with the agreement between Poland and the Paris club in 1992 who decided to reduce the Polish debt by 50% providing that the remaining part is paid back by 2010. The agreement also resulted in the Polish Ecofund (OECD, 1998; Polish Ecofund, 2005). This agreement included an option for the creditor countries to make bilateral agreements with Poland for the conversion of up to an additional 10% of debt for environmental protection purposes. Ecofund was the first institution established in Central and Eastern Europe for managing debt-for-environment swaps.

The US was the first country to contribute to Ecofund through the debt-swap option, followed by France, Italy, Switzerland and Sweden and Norway. Finland had also agreed to a debt for environment swap with Poland prior to the Fund's creation, but the resulting revenues are not managed by Ecofund. Poland receives this money through the ministry of finance.

For the period of operation of the Ecofund (1992-2003), the total revenues from the debt-for-environment-swap accounted for US\$ 314 million. The annual Ecofund's revenues until 2010 will be in the order of US\$ 43-45 million.

The funds received within this mechanism are allocated by Ecofund for the subsidizing of projects undertaken in the following five areas of air protection, mitigation of climate change, water quality improvement, waste management and nature protection. In the period 1992-2003, the nature protection sector received 19% of the grants. This figure however also included the construction of sewage systems in areas with 'outstanding natural value' (Polish Ecofund, 2005). It thus remains unclear what part of the funds actually goes to protected areas and conservation initiatives.

### **3.1.2 Commercial debt-for-nature swaps**

Commercial debt-for-nature swaps have only generated a total of US\$ 112 million in the last 15 years according to figures compiled by the WWF's Center for Conservation Finance. Almost all of these swaps took place between 1988 and 1994, following the Latin American debt crisis.

International commercial banks initiated debt-for-nature swaps in the 1980s to reduce unpaid loans to developing countries. Examples are the Bank of America, Bank of Tokyo, Deutsche Bank, and the Morgan Guaranty Trust Company, who donated commercial debt owed to debtor governments to conservation NGOs. For example, between 1988 and 1993, WWF negotiated four debt-for-nature swaps in the Philippines, generating a total of US\$ 27.3 million in conservation funds (Spergel *et al.*, 2001).

### **3.1.3 Scope**

Commercial debt for nature swaps have become less popular *vis à vis* bilateral programs as a result of the evolvement of other debt reduction initiatives in developing countries. Examples are the Brady Plan in Latin America and IDA sponsored commercial debt programs and the Highly Indebted Poor Countries (HIPC) initiative, that both resulted in significant debt-reductions in the developing countries.

The HIPC Initiative is a debt-forgiveness program initiated by the IMF and World Bank in the 1990s and was foreseen to result in the cancellation of up to 90 percent of the outstanding debt of 30 of the world's poorest countries. The highly indebted poor countries must spend an amount of local currency on poverty alleviation programs, in exchange for the cancellation of the debt. This amount is equivalent to a portion of the interest that it would otherwise have to pay on the cancelled debt. In 2005, the HIPC Initiative approved debt relief of more than US\$ 56 billion for 28 countries (World Bank, 2005a).

The HIPC Initiative currently identifies 38 countries, 32 of them in Sub-Saharan Africa, as potentially eligible to receive debt relief. This implies that many developing countries, notably in Latin America and Asia, are not eligible. Furthermore, debt reduction programmes offer opportunities to negotiate investments in local currency into nature conservation programs in exchange for debt cancellation.

Whether in the framework of HIPC or not, political will is needed to make debt-for-nature swaps a success. Both the IFF and the enhanced HIPC initiatives (see 2.4) demonstrate that political will creates opportunities to realize substantial changes in aid volumes. The challenge remains to reallocate part of these money flows to protected areas.

#### *Advantages*

1. For conservation organisations and other donor agencies a major advantage of a debt-for-nature swap is that it offers a way to leverage their funds and finance a much greater number conservation activities in the debtor country than if the donors had simply made a grant in hard currency.
2. For the developing country that participates in a debt-for-nature swap, the mechanism offers a way to reduce the external debt by using local currency to fund conservation inside the country, which is preferable above using the money to repay commercial or bilateral creditors.
3. They may provide significant amounts of long term funding to conservation, which is usually most difficult to obtain. These funds can serve as matching funds for other donor sources.
4. The debtor countries benefit from the funds to conservation of protected areas, as well as from the reduction or cancellation of their debt. As foreign debt may act as a perverse incentive, debt swaps are also expected to reduce the pressure on environmental resources to some extent.

#### *Limitations*

Spergel (2004:8) mentions four important impediments to the wider applicability of bilateral debt reduction for biodiversity conservation:

1. "First, many sub-Saharan African countries have already had 100% of their bilateral debts unconditionally cancelled by the U.S. and Western European governments. Most of the remaining foreign debt of these African countries is owed to multilateral financial institutions (primarily the World Bank and IMF), which have a policy of never cancelling debt but just rescheduling it instead.
2. Second, a number of debtor and creditor countries prefer to use the funds generated by debt reduction agreements for other social purposes such as poverty alleviation and education.
3. Third, governments or NGOs in some developing countries (such as Brazil or Sri Lanka) are suspicious that such agreements may infringe their country's future sovereign rights to do whatever it wants with its forests and other biodiversity resources.

4. Fourth, some creditor governments feel that certain large debtors countries such as Russia should not be offered the opportunity to use this mechanism because a country like Russia has enough resources to eventually repay its bilateral debts.”

Additionally:

5. Some creditor countries may be less interested in debt reduction programmes, as this reduces their credit worthiness in relation to future loans.

There can be a problem if the debt-for-nature swap is followed by a currency devaluation or runaway inflation. However, this problem can be mitigated if the amount of local currency payments is linked to an external standard, such as the US dollar (Spergel, 2001:7).

### **3.1.4 Conclusions**

Debt-for-nature swaps have an important potential in raising money for biodiversity conservation additional to ODA and the allocation of its proceeds therefore does not compete with other aid targets. Also in relation to current debt reduction programmes such as the HIPC Initiative, there are opportunities to cancel part of the debt in turn for investments of the creditor country into nature conservation.

## **3.2 Conservation trust funds**

Since 1990, environmental funds including conservation trust funds have been established in more than 50 countries (Spergel & Moye, 2004). The main goal of creating a conservation trust fund is to provide long-term funding to protected areas, or small grants to NGOs for conservation projects, which is a clear advantage compared to the typical two to five year funding of most conservation projects by government and donor agencies.

A trust fund is money or other property that is set aside to be used only for specified purposes, and which is managed and controlled by an independent board of directors (Spergel, 2001). Trust funds can be set up to finance a single protected area, a country’s entire protected area system, a regional protected area or for conservation of a particular species. Trust funds can also finance small grants to local communities and NGOs for carrying out conservation activities (Spergel, 2004:8). Research, data collection, monitoring, short-term or long-term training, environmental education, public awareness and integrated conservation and development programmes can also be financed by environmental funds (Phillips, 2000:39). In addition to conservation, environmental funds may be used to finance a wide range of other activities, such as pollution mitigation, or development of new environmental technologies. Examples are Colombia’s Ecofondo and Poland’s Ecofund (see 3.1.1).

Trust funds in the strict sense are restricted to common-law countries such as the United Kingdom and the USA. However, the term *trust fund* is usually applied in the broad sense, including equivalent institutions of civil law countries: *fideicomisos* (Latin America) and *foundations*. They always have a board of directors combining representatives from government agencies, local NGOs, international donors, and sometimes also representatives from local business groups, scientific experts, and international conservation organizations. The charter or other legal document establishing the trust fund defines the kind of projects and activities that can be funded. This provides assurance to donors that the money contributed to a trust fund will only be used for the prescribed purposes.

There are three types of conservation trust funds: endowment funds, sinking funds and revolving funds.

1. Endowment funds have a fixed amount of capital, which is invested. Only the revenues of capital investment are used to finance conservation activities, the capital itself is never spent. Endowment funds are the most common trust funds.
2. Sinking funds use part of their capital to finance conservation in addition to capital investment revenues. In this way, the capital of a sinking fund decreases gradually over time until it ceases to exist.
3. Revolving funds receive revenues from taxes or user fees and spend most or all of these revenues on conservation. The endowment is often funded by contributions from a variety of different sources, such as debt-for-nature swaps, GEF grants, multilateral banks, bilateral donors, and grants from private foundations (e.g. the MacArthur Foundation).

Funding for the establishment of trust funds may proceed from different sources:

- grants from international donors
- host country governments counterpart contribution, such as the US\$ 45 million Mexican Conservation Fund, to which the Mexican Government contributed US\$ 10 million
- the proceeds of result of debt-for-nature swaps, such as the US\$ 30 million Foundation for the Philippine Environment
- bilateral debt forgiveness, such as in the case of Madagascar: the government of the US agreed to cancel US\$ 50 million of official bilateral debt on the condition that the government of Madagascar Government would allocate an amount in local currency equal to 25% of the debt that was cancelled, for the purpose of establishing an endowment fund for biodiversity conservation (see also 3.1.1 on bilateral debt-for-nature swaps)
- major international conservation NGOs.

### ***Examples of conservation trust funds***

As illustrated by Bayon & Deere (1998) and Spergel (1998), trust funds can be applied in many ways to finance nature conservation. Spergel (1998) states: “Some conservation funds have been established exclusively to finance activities in a particular protected area, like the Bwindi and Mgahinga Trust Fund in Uganda; while others have been established for a country’s entire protected area system, as in Belize. In some cases, a fund is used only to finance conservation activities by local NGOs (as in the case of the Foundation for the Philippine Environment); while in other cases, a fund is used to finance a range of activities that is broader than (but includes) biodiversity conservation, such as pollution mitigation, or development of new environmental technologies and businesses (as in the case of Colombia’s ECOFONDO and the Polish Ecofund). Some biodiversity conservation funds are established only for a specific region of a country (such as the Russian Far East Biodiversity Fund), while others are multinational (such as the Eastern Carpathians Biodiversity Foundation, involving Slovakia, Poland and Ukraine). The scope of a fund’s activities can be as wide or as narrow as the founders wish to specify in the legal charter.”

Most conservation funds have been set up as endowments. For example, the Bhutan trust fund has an endowment of more than US\$ 27 million contributed by international donors, including the GEF, WWF, the governments of Norway, Denmark, Switzerland and Netherlands. The US\$ 4 million annual revenues from capital investment are used to finance a variety of projects for research, training, environmental education, and sustainable resource management by local communities. Brazil’s FUNBIO fund, which is intended to be completely used up in fifteen years, is an example of a sinking fund.

Belize's Protected Areas Trust Fund (PACT) funded by a US\$ 4 Conservation Fee paid by all foreign tourists visiting Belize is a revolving fund.

NGOs such as WWF, The Nature Conservancy and Conservation International have played an important role in assisting the design of conservation trust funds and providing capital.

At the national level, recent examples include the Bolivia Protected Areas Fund FUNDESNAF (US\$ 46 million endowment), the Mama Graun Conservation Trust Fund for Papua New Guinea (US\$ 15 million endowment), and the Ecuador National Environmental Fund FAN, which was funded by several bilateral debt swaps and a GEF grant. An example of a trust fund network is RedLAC: the Latin American and Caribbean Environmental Funds Network. This network administers more than US\$ 150 million for conservation in 27 funds across Latin America and the Caribbean.

Spergel (2004:8) provides a list of the largest endowment type conservation funds:

- Mexico (a US\$ 30 million endowment and a US\$ 16 million sinking fund)
- Bhutan (US\$ 36 million endowment)
- Colombia (US\$ 30 million endowment)
- Philippines (US\$ 26 million endowment)
- Indonesia (US\$ 25 million endowment)
- Panama (US\$ 25 million endowment)
- Madagascar (US\$ 12 million endowment)
- Peru (US\$ 10 million endowment)
- South Africa's Table Mountain Fund (US\$ 7 million endowment)
- Uganda's Bwindi and Mgahinga National Parks Fund (US\$ 6 million endowment).

### ***Advantages***

1. Conservation trust funds are a decentralising mechanism that can be used to divide large international grants into many small grants that are paid over several decades or more.
2. Conservation trust funds can provide the long-term and stable financing that is necessary for the effective implementation of conservation programs. This makes them less vulnerable to changes in political or economic priorities.
3. Conservation trust funds can promote the participation of a wide range of interested groups, such as government agencies, non-governmental and business sectors, and relevant local interest groups, by including these groups on the fund's board of directors or in technical review committees. This can be attractive to donors, as it ensures more openness and accountability, than if donors simply channelled funds to a government agency.

### ***Limitations***

1. In view of the current tendency of an increasing amount of money that is being deposited in endowments of trust funds, it remains to be seen which part of the created revenues flows effectively into protected areas financing. Not all conservation trust funds have the specific aim of providing grants in support of protected areas, or their portfolio may include a wide range of other activities.
2. A balanced representation of relevant actors is a crucial issue. The question is, to what extent local communities effectively have a say in the administration of conservation trust funds.
3. Complex structures of conservation trust funds may decrease their access for local communities, and make governance more difficult and less transparent.

4. Administrative costs may be high and rates of return on investment may be variable (Spergel, 2004).
5. Trust funds tie up considerable amounts of funding, which can be considered a disadvantage by donating agencies.

### ***Conclusions***

Conservation trust funds have a strong potential to provide long-term financing and are an important means of bundling funds from different sources and of decentralizing them. Crucial to the improvement of trust funds is to increase the transparency of allocation of resources, and the active participation of relevant stakeholders and their representation in the Board of trust funds. Conservation trust funds should preferably receive active government support, while conservation activities should be in line with national conservation strategies and policies. Using the proceeds of debt-for-nature swaps for the establishment of a conservation trust fund appears to be a widely applied formula.

### **3.3 Payments for Environmental Services (PES)**

People are increasingly becoming aware of the risks and costs involved in the loss of healthy ecosystems and the multiple services they provide. For example, degradation and loss of forests may lead to accelerated erosion, the occurrence of landslides and floods as well as impacts at higher scale levels, such as the extinction of flora and fauna species and climate change. Scientific understanding of the role of forest and other ecosystems in providing the different ecosystem services has also improved dramatically in recent years. This growing awareness is drawing the attention to the multiple (economic) benefits of ecosystems, which thus far had been taken for granted. At the same time, landowners are seeking compensation for the opportunity costs of managing their ecosystems sustainably. Together with other drivers, including frustration with traditional government regulatory approaches to natural resources management, growing recognition of the limits of protected area approaches to conservation, societal demand for ecologically sound products, and the forest-based industry's need to find additional revenue sources to remain competitive, the past decade has seen widespread experimentation with market-based mechanisms that address the problems associated with the loss of ecosystem services worldwide (Scherr *et al.*, 2004).

#### ***Environmental services***

Ecosystems provide humans with a wide range of benefits. The recent Millennium Ecosystem Assessment (2005) groups this variety of goods and services as *provisioning services*, such as food and water, wood and fibre, *regulating services* such as water purification, climate regulation and disease regulation, *supporting services*, such as nutrient cycling, soil formation and primary production, and *cultural services*: aesthetic, spiritual, educational and recreational services. The term “environmental services” thus refers to the overall concept of natural systems (in contrast to man-made physical infrastructure and technological capital) that provide a continuous flow of valuable goods and services to society (Aylward, 2002).

#### ***Principle of PES***

The underlying principle of payments for environmental services is attractively simple: beneficiaries financially compensate the landowner for the environmental services his land (or other ecosystem) provides. These payments must “tip the balance” (Nasi *et al.*, 2002) in favour of the adoption or protection of the land use which provides the desired services.

The majority of these market-based mechanisms have focused on one or a combination of the following three main categories of ecosystem services: watershed protection, biodiversity conservation and carbon sequestration (Landell-Mills & Porras, 2002, Pagiola *et al.*, 2002).

Most of the emerging compensation schemes have focused on the services from *forest ecosystems on private lands*, either by avoiding deforestation or by increasing tree cover. Nonetheless, this chapter will also describe some cases and explore the potential of payment mechanisms that specifically involve protected areas.

### ***Valuation and prices of ecosystem services***

Many types of valuation methods are being used to attach an economic value to ecosystem services. However, in practice, many forest values simply cannot be captured in traditional economic valuation studies. Carbon sequestration is probably the one exception in this regard (Kaimowitz, 2002).

Compensation mechanisms are likely to work best in the cases where the opportunity costs (for the service providers) are low, while the benefits (for the beneficiaries) are high. As Scherr *et al.* (2004) argue, a powerful case can be made that the need for ecosystem payments is strongest in developing countries, including in the tropics: not only may the pressures on the ecosystems be highest in these countries; many of the benefits from tropical forest ecosystems are not confined to the local level but enjoyed globally.

PES schemes can be implemented for different services and at different geographical scales. For example, the benefits from the (probable) beneficial climatic effects from carbon sequestration by forests may be global, while the beneficiaries from an ecosystem's water services usually live downstream in the same watershed. Over the last decade, willingness to pay for forest environmental benefits by industrialized countries has led to a growing number of international payments.

#### **3.3.1 Markets for watershed services**

Markets for watershed services are typically local in scope, with most transactions occurring at the watershed level. Markets for watershed protection do not involve trading commodities such as clean water, but rather compensating for the opportunity costs of land uses that are expected to generate hydrological benefits. The water services that are considered in existing PES schemes include:

- Water flow regulation: maintenance of dry season flows and flood control;
- Water quality maintenance: sediment load control, nutrient load control (e.g. phosphorous and nitrogen), chemical load control, and salinity control;
- Erosion and sedimentation control;
- Land salinization reduction and water table regulation; and
- Maintenance of aquatic habitats (e.g., maintaining water temperature, shading rivers and streams, presence of woody debris in water) (Landell-Mills & Porras, 2002:112).

Demand for water services mostly originates from downstream water users, including farmers, hydroelectric producers, and domestic water users in urban areas (FAO, 2003). Water services are usually funded through user fees or negotiated payments by beneficiaries to allow for improved management of the protected area upstream.

In their world-wide survey of 61 watershed-based payment schemes, Landell-Mills & Porras (2002) found that these markets are more institutionalised and rely on a cooperative relationship between demand and supply rather than on competition among service providers and beneficiaries. The reason is obvious: water users in a particular area usually depend on the water resources upstream within the same watershed, which limits the possibility to choose between many different suppliers. This survey also found an increased willingness on the part of beneficiaries to pay for services, as awareness is growing on the importance of sustainable land use management in upper watersheds for the maintenance of water services.

Watershed-based PES schemes have been put in place in several countries, including the United States, Mexico, Colombia, Ecuador (Echavarría *et al.*, 2004), Costa Rica (Reyes *et al.*, 2002), Honduras and Brazil.

Given the local nature of demand for water services and the presence of a limited number of well-organized beneficiaries (e.g., water or hydroelectric utilities, irrigation commissions), it may be relatively easy to mobilize downstream beneficiaries and involve them in compensation schemes. However, since it is very difficult, time consuming, and expensive to quantify the impacts that result from conservation practices in terms of economic returns from the improvement of water quality and quantity services, *vis-à-vis* a baseline scenario, this raises doubts as to whether the PES system is actually providing the services for which beneficiaries are paying (Rojas & Aylward, 2003). Another concern is that the application of PES might lead to claims on the access to water on behalf of paying stakeholders.

#### ***Examples of payments for water services***

One of the most famous examples of the developed world is the PES system established by the city of New York to protect its drinking water sources. In the late 1990s, the city of New York increased water fees by nine percent to invest in the protection of the Catskill-Delaware and Croton Watersheds. This was done primarily through a land acquisition program and conservation easements that expanded the protected area within the watershed to 121,500 ha. In addition, farmers and forest producers received compensation to remove environmentally sensitive lands from production or to improve forest and land management practices.

Another example is the *Fondo Nacional del Agua* (FONAG) in Ecuador. FONAG collects contributions from different water users, including the water utility of the city of Quito and a hydroelectric power utility, to fund conservation practices in the upper watershed that provides drinking water for the city of Quito (Pagiola *et al.*, 2002: 91).

In Guatemala, a pilot programme of support to forest conservation activities (PPAFD) started in 2000, where landless farmers living at elevations above 1,500 m will receive revenues of up to US\$ 55 per ha per year in a number of watersheds. Pilot projects of payments for hydrological services started in Nicaragua, Honduras and El Salvador at municipal level in the framework of the Programme for Sustainable Agriculture on Sloping Lands in Central America (PASOLAC) (Pérez, 2003).

Recently, a project for the establishment of a water fund is being implemented in Sierra de las Minas, Guatemala. In this case, major downstream water consumers in the sectors of agriculture and industry will make payments to a water fund. These revenues will partly be used to finance the maintenance of hydrological services provided by the Man and Biosphere Reserve of Sierra de las Minas (Verweij, 2004).

The level of payments for water services is in many cases not sufficient in comparison to the opportunity costs of conservation. Therefore, water funds may not be sustainable from the economic point of view (Verweij, 2002; 2003). Water funds have evolved from bottom-up societal processes and are the result of intensive interaction and consensus building among multiple actors. One could benefit from the existence of these institutions by supplying them with complementary payments for other environmental services provided by natural ecosystems in upper watersheds, such as carbon sequestration and biodiversity conservation.

### 3.3.2 Markets for carbon sequestration services

The creation of an international framework to counter climate change lies at the heart of the emerging market for forest carbon offsets. The Clean Development Mechanism (CDM) was put into force in February 2005, with Russia's ratification of the Kyoto Protocol.

This mechanism allows for reforestation and afforestation activities in developing countries. However, to date no agreement exists over the definition of both activities. It is important to realize that the CDM does not offer a possibility to finance the maintenance of existing forests or other ecosystems. This implies that protected areas are only likely to potentially benefit from carbon payments under the CDM, if they include reforestation or afforestation activities as a means of ecosystem restoration. In the case of buffer zones and ecological corridors, the potential for the creation of this type of carbon offsets seems to be larger.

A principle criticism of sinks projects within the existing CDM system is that these credits reduce the burden for industrialized countries to significantly reduce fossil carbon emissions. Carbon sequestered in natural ecosystems can be returned to the atmosphere during fire or decomposition (see Körner, 2003). On the other hand, it is clear that urgent action needs to be taken to reduce carbon emissions due to degradation and conversion of natural ecosystems. For example, the amount of carbon released each year into the atmosphere due to deforestation in Brazil and Indonesia each year is equal to 80% of the yearly total carbon emission reductions the Kyoto Protocol intends to realize during its first commitment period (2008-2012) (Santilli *et al.*, 2005). Forest loss accounted for 10-25% of global greenhouse gas emissions during the 1990s (Houghton, 2003).

Treating tropical deforestation as an emission is the latest proposal to come before the UN Framework Convention on Climate Change but this has not, as yet, resulted in the adoption of a particular strategy. A future approach under the Kyoto Protocol could be to establish targets for reducing carbon emissions through reduced deforestation rates. These tradable emission reductions could be sold in the international emissions trading system. Recently, Santilli *et al.* (2005) made a new call for industrialized countries to make payments to governments of developing countries to reduce tropical deforestation. Assessment, measurement, monitoring and payments would take place at the national, rather than the project, level. This has the advantage of reducing, if not eliminating, the risk of deforestation leakage from one plot to the next within a country.

In comparison to other environmental services, such as the provision of biodiversity or watershed services, it is relatively easy attach an economic value to carbon sequestration services of (forest) ecosystems. This can be explained from the fact that the methods used to calculate the value of forests as sinks and stocks of carbon have been very different from those used for other environmental services. "The starting point is to say that society has decided not to allow total carbon [CO<sub>2</sub>] emissions to go beyond the levels agreed upon under the Kyoto Protocol and then ask what market price is likely to achieve an equilibrium between the supply and demand for carbon sinks, including carbon sequestration by forests. That is rather different from measuring the economic value of the benefits that forests provide by mitigating climate change CO<sub>2</sub> emissions. The latter can still not be done because no one has a clear sense of the real magnitude of the costs and benefits of climate change" (Kaimowitz, in Verweij, 2002:2).

Given the restrictions on forest carbon offsets and estimating a value of US\$ 10 per ton of carbon, the CDM is expected to raise at most US\$ 300 million for afforestation or reforestation per year in the first commitment period (2008-2012) (Scherr *et al.*, 2004).

Two major additional environmental risks associated with the creation of carbon markets are: the risks of seeing tree plantations replace native forests and of financing conservation where no deforestation is occurring in the first place (the baseline discussion). In the first case, carbon markets would create perverse incentives to deforest and afforest with monocultures that sequester carbon the most quickly, while in the second case, they would have no real value-added in terms of forest conservation, since the forests were protected without payments. Carbon sequestration projects must therefore be carefully defined.

### ***Carbon sequestration projects in relation to the Kyoto Protocol***

The Costa Rican Joint Implementation Office OCIC was set up in 1995 as the national counterpart for climate change projects and negotiations. It was through OCIC that Costa Rica developed the concept of Certified Tradable Offsets for carbon sequestration. In February 1997, through OCIC and in the framework of Activities Implemented Jointly (AIJ), the Government of Costa Rica issued Certified Tradable Offsets to Norwegian investors in exchange for a total of US\$ 2 million for the sequestration of 200,000 tons of carbon. Activities Implemented Jointly are meant to gain experience and do not result in tradable carbon credits according to the emission trading system under the Kyoto Protocol. The Costa Rica-Norway AIJ Pilot Project was the first international financing initiative for the national Payments for Environmental Systems programme (see subsequent sections of this chapter). During the period 1996 to 1999, a total of 2,387 ha in the upper Virilla river basin were incorporated into programme, which corresponds largely to land under forest protection. This area is equivalent to about 60% of the total 4,000 ha referred to in the project agreement (Rojas & Aylward, 2003).

Since 2000, as part of the CDM, the World Bank has launched three funds to invest in projects for reducing CO<sub>2</sub> emissions in developing countries and several pilot projects for forest carbon sequestration have been established, to develop experience with this new type of markets. The Prototype Carbon Fund (PCF) is the World Bank's flagship fund for CDM projects. The PCF buys and stimulates the development of cost-effective carbon emission reductions in developing countries. Participants in the PCF receive a share of the Emission Reductions, verified and certified in accordance with agreements reached with the countries "hosting" the projects. By June 2002 the fund had received contributions of US\$ 180 million from six investing countries and 17 companies and in October 2003, the PCF had spend US\$ 90 million, however primarily in energy efficiency and renewable energy projects (Scherr *et al.*, 2004).

The BioCarbon Fund started operations in 2004. This fund aims to provide carbon finance for projects that sequester or conserve greenhouse gases in forests, agro- and other ecosystems. As the website states, "Through its focus on bio-carbon, or 'sinks', it will deliver carbon finance to many developing countries that otherwise have few opportunities to participate in the Clean Development Mechanism (CDM), or to countries with economies in transition through joint implementation (JI). The BioCarbon Fund will test and demonstrate how land use, land-use change and forestry (LULUCF) activities can generate high-quality Emission Reductions with environmental and livelihood benefits that can be measured, monitored and certified, and stand the test of time" (World Bank, 2005b).

The Community Development Carbon Fund (CDCF) was launched at the World Summit on Sustainable Development (WSSD) in 2003 to find ways to reduce the transaction costs of small-scale CDM projects by streamlining methodologies and procedures. The CDCF aims to support projects such as mini- and micro-hydro, wind energy, small municipal and agricultural waste projects, energy efficiency, clean transport, and agro-forestry projects (World Bank 2005c).

It is too early to evaluate what the three funds will contribute in terms of financing forest carbon sequestration projects. The development of the carbon market in relation to CDM is highly uncertain and depends on international negotiations on the implementation of the Kyoto protocol. Regarding land use, land use change and forestry activities, it should be noted that to date, no methodology for Afforestation and Reforestation projects has been approved. This involves a high risk for investments into such activities. What will happen in the next commitment period of the Kyoto protocol, after 2012 is surrounded by even larger uncertainties.

### ***Carbon sequestration projects outside the Kyoto Protocol***

There are examples of carbon sequestration projects being developed outside the Kyoto framework. In Chiapas, Mexico, the Bioclimatic Fund was established to manage funds collected under the Scolel Té project, a carbon sequestration scheme based on agroforestry practices. More than 300 peasant coffee and corn farmers participated in the project by planting trees on around one fifth of their land parcel. The project was financed by the International Automobile Federation that purchased the first 5,500 t of carbon. The carbon payments represented a minimal income for the farmers, but this incentive was reinforced by opportunities to penetrate the market for timber produced using sustainable forestry practices and to integrate carbon sequestration into other strategies such as organic coffee production and other agro-ecological initiatives (Rosa *et al.* 2003:27).

In Bolivia, The Nature Conservancy, along with the Bolivian government, Fundación Amigos de la Naturaleza (an NGO), and three US-based energy companies, have developed the largest forest-based carbon project in the world. The project involves the preservation of 634,286 ha of land on the southern and western boundary of the Noel Kempf Mercado National Park by incorporating it into the park and includes the following components: (1) carbon dioxide emission reductions through the cessation of logging activities and the protection of forest land from conversion to agricultural use; (2) forest protection, regeneration, and preservation; and (3) leakage prevention. The project was set up in 1996 and aims at sequestering 26 million tons of carbon over 15 years at a cost of US\$ 9.6 million. The Nature Conservancy considers this project in partnership with other organisations as one of its model carbon offset projects. The lessons learned from these projects are to be translated into best practices for adoption by the carbon credit market (Bruneau, 2000).

### **3.3.3 Markets for biodiversity services**

Markets for biodiversity services in practice usually involve direct payments for habitat and species conservation. These markets may exist at a local, national and international scale. The major buyers of biodiversity conservation services are international organizations, foundations and conservation NGOs. Pharmaceutical companies are also involved in markets for biodiversity services, although their contributions at a global scale are marginal.

The value of biodiversity conservation services is difficult to establish. For instance, economic valuation methods are generally not capable of estimating the costs of species extinction and risks and costs associated with the loss of forests and other ecosystems with any accuracy.

Landell-Mills & Porras (2002) surveyed 72 payments schemes for biodiversity services and showed that these markets are nascent and to a large extent experimental.

### 3.3.4 Markets for combined services

A single land area may offer different ecosystem services at the same time. Landell-Mills and Porras (2002) surveyed 28 cases of compensation schemes for bundled services and found that they can bring added revenues to land users, but that such an approach is more complex to set up since it involves dealing with several services at the same time. For example, it may be difficult to establish new forest management approaches and techniques that will optimise the production of several services.

#### *The example of Costa Rica's PES scheme*

Costa Rica is often cited in the literature as a pioneer and leader in market based conservation initiatives in the developing world and the experiences have had a large impact on the theoretical and practical discourse around payments for ecosystem services (see e.g. Chomitz *et al.*, 1998). In 1996, Costa Rica was the first country in the world to introduce a nationwide framework to pay for forest environmental services. This PES scheme allows for financial compensation to different forestry activities on private lands, by 'selling' four environmental services to different national and international stakeholders. Costa Rica's four tradable environmental services are:

- mitigation of greenhouse gases (carbon sequestration);
- protection of water for rural, urban or hydro-electric purposes;
- protection of biodiversity for conservation, sustainable scientific and pharmaceutical purposes, research, genetic improvement and the protection of ecosystems and life forms;
- preservation of natural scenic beauty, particularly for tourism.

Through the programme of PES the National Forestry Finance Fund FONAFIFO, pays private landowners and NGOs either for maintenance of primary forest, establishment of forestry plantations, or forest management, with payments ranging from US\$ 210 per five years for conservation up to around US\$ 537 per five years for reforestation (Ortiz & Kellenberg, 2001).

Between 1997 and 2003, the Payments for Environmental Services program incorporated 376,241 hectares, around 7.5% of Costa Rican territory. Of these, 321,771 ha correspond to forest protection, 23,406 ha to forestry plantations and reforestation and 28,066 ha to forest management. Until 2003, 5,468 people have participated in the program (FONAFIFO, 2004).

One of the main targets of Costa Rica's PES was to attract additional funding from the international community for the forest sector. In particular the sales of carbon offsets through the Joint Implementation Office (OCIC) and selling biodiversity services through bio-prospecting were expected to provide for a substantial share of the costs of the program. However, in practice, international payments for these services have been marginal and the programme has been financed primarily at the national level with revenues from the fossil fuel tax, accounting for approximately US\$ 6.5 to 8 million per year. (Soto & Gatjens, 2002).

Loans provided by development banks also provide for a substantial amount of funding for the PES program. For example, the Ecomarkets project is a financial assistance package from the World Bank and is considered to be of great importance to maintain the functioning of the PES program in the short term (Soto & Gatjens, 2002). The project that seeks to conserve biodiversity in priority areas is financed by a US\$ 32.3 million loan from the World Bank, a US\$ 8 million donation from the Global Environment Facility, and US\$ 8.6 million funds from the Costa Rican government (Pagiola *et al.*, 2002).

Often inspired by the experiences with PES in Costa Rica, other countries are currently implementing compensation schemes for forest conservation and working on institutional frameworks. For example, Mexico is currently discussing a nationwide PES scheme to address its deforestation problem (Alix *et al.*, 2003). These developments are often stimulated by development institutions that provide loans and donations for PES programs: PES programmes funded by the World Bank are at work or in their pilot stages in Nicaragua, Colombia, El Salvador and Guatemala, among other countries (World Bank, 2005d).

#### ***Integrated environmental services and infrastructural development projects***

An example of an infrastructural development project, which integrates payments for environmental services, is the Amoya River Environmental Services Project in Colombia supported by the World Bank and the UN. The project is to contribute to the reduction of greenhouse gas emissions from the power sector in Colombia through the promotion of an 80 MW run-of-river generation facility. The project is expected to displace an estimated 5.43 million t CO<sub>2</sub> equivalent in the first 14 years of operation. Watershed protection and biodiversity conservation activities benefiting the national park Las Hermosas are financed with part of the revenues from the project.

Another example is the creation of the Mesoamerican Biological Corridor aimed at interconnecting major protected areas across Central America, which stems from the Convention on Biological Diversity (CBD) and an agreement among the countries of Central America. This initiative attracted funding from GEF and led to the creation of a PES scheme supporting the conservation objectives of the biological corridor initiative (Esquivel & Segura, 2002).

#### ***The BOS “Mawas” debt-for-nature swap and carbon offset agreement***

Between 2001 and 2003, the Borneo Orangutan Survival Foundation (BOS) prepared a draft for a unique combination of a debt-for-nature swap (see also 3.1.1 on bilateral debt-for-nature swaps) and a carbon offset agreement (Smits, 2003). The concept seeks to overcome problems with conventional debt-for-nature swaps such as mismanagement, social problems and budget constraints by making the debt forgiveness independent of the long-term financial management issues and bringing most of the actual execution under a partner of the government. Desiccation and subsequent fires after deforestation and the construction of irrigation channels are threatening vast peat forest areas of Mawas. The BOS Foundation, an Indonesian NGO, aims at protecting this area and promoting sustainable local development. Debt swaps between Indonesia and the governments of Germany and The Netherlands should lead to the establishment of a trust fund to finance these activities. The sale of CO<sub>2</sub> credits to a major oil company has been agreed, on the condition that the BOS Foundation acquires the threatened peat forest area for protection.

Thus, in this innovative concept, two bilateral debt-for-nature swaps, the establishment of a conservation trust fund, and payments for carbon services are combined into an integrated approach involving multiple actors.

#### **3.3.5 Scope**

Experts at the GEF roundtable on forests in 2002 concluded that although “the demand for environmental services is now more forcefully asserted, and mechanisms to pay forest owners directly have been tested [...], payments for environmental services have not yet become a major factor in achieving forest conservation.” (GEF, 2002).

PES schemes tend to work best when they have the following characteristics (Mayrand & Paquin, 2004):

- They are based on clear scientific evidence linking land uses to the provision of services;
- They clearly define the environmental services to be provided;
- Their contracts and payments are flexible, ongoing and open-ended;
- Their transaction costs do not exceed potential benefits;
- They rely on multiple sources of revenues delivering money flows that are sufficient and sustainable in time;
- Compliance, land use changes, and the provision of services are closely monitored; and
- They are flexible enough to allow adjustments to improve their effectiveness and efficiency and to adapt to changing conditions.

In relation to the first characteristic listed above, it is important to note that environmental services are often hard to quantify or cannot be quantified on a case-to-case basis. For example, it would be too time-consuming and costly to evaluate the role of natural ecosystems in relation to the provision of water services in each particular watershed for which a payment scheme is envisaged, and this would require long-term hydrological records that are often not available. The intrinsic value of biodiversity cannot be expressed in economic terms. This implies that it is probably necessary to abandon the traditional economic concept of being able to detail and quantify the services provided in turn for a certain amount of payment. The precautionary principle should rather be taken as an important justification for the implementation of PES involving restrictions on land use, and the notion that the combined environmental services provided by natural ecosystems in most cases represent a higher value than those provided by man-made ecosystems.

Landell-Mills & Porras (2002:210) propose the following key steps to develop successful markets for environmental services:

- Identify benefits provided by a specific service and by determination of (forestry) activities that deliver this service;
- Undertake a feasibility study;
- Establish willingness to pay;
- Formalize property rights;
- Establish payment mechanisms and supporting institutions; and
- Undertake pilot activities and feedback to market design.

In addition, learning from pilot projects constitutes an important element in the process of establishing successful PES mechanisms.

### ***Advantages***

1. PES represents a mechanism that has the potential to raise funds at local, regional and global scale levels.
2. PES institutional set-ups provide an opportunity for the global community to make additional payments for the provision of single or multiple environmental services.
3. PES may support both public protected areas and conservation on private lands simultaneously, within a region or watershed.

### ***Limitations***

1. The spread of PES programs in developing countries appears to be good news from a conservation perspective. However, as becomes clear from the PES scheme in Costa Rica, to date the international community shows little interest in financing ecosystem conservation through PES schemes, even if a functional institutional and operational framework is in place.

2. Benefits of the maintenance of ecosystem services are often hard to quantify, and this holds also true for the role (semi-)natural ecosystems play in the maintenance of ecosystem services. This limits the applicability of PES as a ‘market mechanism’, in particular in relation to single environmental services.
3. As indicated above, PES tend to focus on forest protection on private lands.
4. The application of PES should not lead to exclusion of stakeholder groups from access to public resources.

### **3.3.6 Conclusions**

PES schemes have resulted in payments for determined environmental services: notably carbon sequestration, hydrological services and biodiversity conservation, or a combination of services. PES has a proven potential to contribute to biodiversity conservation as the number of successful projects is growing. Although there is scope for increased application of PES, the number of schemes is currently limited on a global scale. This may be due to the complexity in institutional set-ups, the related time-consuming design and relatively high transaction costs. Payments by the global community as a compensation for the global services of carbon sequestration and biodiversity provided by protected areas have been limited to date. A reliable source of funding in the form of taxes or levies generating a steady flow of income therefore is crucial to the sustainability of PES.

There are cases where a synergy between PES and poverty alleviation is created. Tangible returns in terms of environmental services provided, should not be the guiding principle for donor funding of PES schemes, but rather an assessment of the long-term risks of the loss of nature and the application of the precautionary principle. PES has important potential to compensate private landowners in buffer zones and ecological corridors, local (indigenous) communities managing protected areas, and privately owned nature reserves, for restrictions on land use in turn for the provided environmental services. PES should not be used to exclude stakeholder groups from access to public resources. Bundling of environmental services into integrated payment schemes in support of multiple environmental services is an important option to increase the level of payments.

## 4 Property rights approaches

Most multilateral and bilateral institutions cannot fund land acquisition. For Latin America, at least for the 1990-1997 period, Castro & Locker (2000) found “strikingly low numbers” for projects dealing with land acquisition. In order to overcome this problem, several alternative property rights approaches in support of conservation have been developed.

According to Richards (1999), the potential of secure tenure or ownership of forest resources may be over-estimated, since it provides no guarantee of sustainable forest management without changes in the underlying economic incentives. However, in many approaches of financing mechanisms in support of conservation, the necessity of changes in land tenure system is completely neglected and indigenous rights to land not recognized. These are basic human rights issues. Insecure or unclear property rights are a policy failure that discourages long-term investment. Property rights approaches have the potential of addressing this problem, if securing land tenure rights for local land users is made conditional to its application.

This chapter deals with three types of property right approaches:

- Conservation easements
- Conservation concessions
- Community driven conservation

### 4.1 Conservation easements

A conservation easement is a legally binding agreement between a property owner and a conservation organization - usually a private non-profit land trust that permanently restricts the development and future use of land to ensure protection of its conservation values. Originating in the late 1800s, the conservation easement has become the single most important tool for land protection in the United States. A hybrid between outright government land acquisition and regulation, conservation easements are voluntarily donated or sold by landowners at their discretion. Landowners may receive benefits in the form of income tax of real estate tax deductions. NGOs often play an important intermediary role, by creatively applying laws and other relevant regulation.

#### *Scope*

Conservation easements have not been widely applied in developing countries. Only since the eighties, these mechanisms have been implemented occasionally in countries such as Costa Rica, Ecuador, Mexico and The Philippines.

#### *Advantages*

1. Conservation easements are an attractive mechanism to secure private land for conservation purposes, for example in the case of large landownership.

#### *Limitations*

1. Conservation easements should not be formulated in such a way that they preclude any future land reform.
2. Property rights of local communities should be secured and clarified as a condition to the application of conservation easements.

## **4.2 Conservation concessions**

Under a conservation concession agreement, governments or local resource users agree to protect natural ecosystems in change for a steady stream of structured compensation (Rice, 2002). Payments may reflect costs of government administration and enforcement, decreased revenue from taxes, lost employment, and the opportunity costs of foregoing natural resource exploitation. The concept of conservation concessions has been developed at the Center for Applied Biodiversity Science at Conservation International and is being implemented in a range of different situations. The first concessions were agreed with governments, for example in 2001 a conservation concession encompassing 135,000 ha was established in the Peruvian Amazon in the Los Amigos River watershed. Previous to this agreement, the government of Peru included a provision in the new Forestry Law that legally permits conservation concessions as a competitive land use. Conservation International is currently exploring opportunities to develop conservation concession contracts with indigenous groups and local communities.

### ***Scope***

If local communities do not benefit substantially from payments derived from conservation concessions, the application of this instrument can be considered unethical and in disrespect of basic human rights. On the other hand, if the condition of substantial benefits to local communities is met, the mechanism is a promising one.

### ***Advantages***

1. The limited term of conservation concessions makes it an attractive option to governments and local resource users.
2. It can be used as an option to gain time in the face of destructive land use practices, which is clearly illustrated by the case of buying timber concessions from logging companies. In the meantime, local communities can be empowered, and money raised for acquisition of land titles.
3. Conservation concessions can also be targeted to sensitive species, by providing payments, employment or support for community projects to local people if they forego hunting or harvesting determined species.

### ***Limitations***

1. A conservation concession agreement has a limited term, typically ranging from 5 to 10 years. Long-term conservation is therefore not guaranteed, as this depends on the renegotiation of the contract.
2. There are as yet no well-documented cases of local communities who benefit from payments derived from conservation concessions.
3. Transaction costs of these mechanisms are often high.
4. Both conservation concessions and conservation easements face technical and political problems involved in monitoring and evaluation.
5. At present there is only limited global willingness to pay for them to work.

## **4.3 Support to community-based conservation**

The management of protected areas has often been based on models excluding the local resident population and perceive their concerns as incompatible with conservation. Mulongoy & Chape (2004: 17) state that, “while the IUCN PA categories V and VI are conceived to be more inclusive of human communities, virtually all IUCN categories can be compatible with resident or user communities”.

There has been substantial debate on this issue (see also Child, 2004), which led to the widely accepted principle that it is considered unethical to move people from their lands for the sake of conservation. Forced resettlement of local communities used to be a common practice during the creation of a protected area (see also Cernea & Schmidt-Soltau, 2003a; 2003b). The CBD Programme of Work on Protected Areas decided (at COP7, 2004) on prior informed consent of Indigenous Peoples in any aspect of a resettlement programme associated with protected areas.

As local communities in developing countries usually continue to depend on the natural resources included in protected areas for their livelihoods, it is regarded counterproductive when no economic alternatives to natural resources exploitation are provided to local people. However, sharing of benefits arising from the management of protected areas and participation of local communities in the planning process often remain problematic issues.

The final decisions of the 5<sup>th</sup> World Parks Congress in Durban include the need for the recognition of the ownership for local communities about all kinds of IUCN protected areas categories (CBD, 2003). This is seen as a shift in paradigm regarding the concept of protected areas. It implies shifting from the strict conservation of nature towards the legal safeguarding of territory for a wide range of purposes in the context of biodiversity conservation: from strict protection to small-scale, non-industrial sustainable use by local communities.

It is often stated that the full recognition of their territorial rights and their cultural autonomy by law is a pre-condition for the indigenous communities to play an important role in the management of their natural environment. As Rodríguez-Beccera suggest in Van der Hammen (2003), the form of compensation to the indigenous communities for the management and protection of their habitats has to be determined by the needs and cultures of the communities themselves. Monetary compensation is an option in some cases, while in other cases the recognition of territorial rights and protection against invasion by outsiders or against illegal occupation may be an even more important type of compensation.

Colombia's policy on indigenous people includes recognising their rights relating to political and administrative autonomy, land tenure, education and health. The constitution recognises *resguardos* as major areas where the indigenous communities have inalienable management rights and ownership. It is a collective property title of the land in a legal form that protects both the territory as well as the indigenous cultural and political autonomy. The government of Colombia allocates 'territorial transfers' from the central State budget directly to the indigenous institutions that manage the *resguardos*, as if they were municipalities.

Part of the financial resources can be used to support the design and implementation of management plans for the *resguardos*, involving sustainable resource extraction and conservation. From 1994 to 2001, the *resguardos* received a total amount of US\$ 23 million, which corresponds to a payment of US\$ 0.82 per ha over this period (Van der Hammen, 2003).

Even though the indigenous population represents a minority in Colombia, making up about 2% of the population, they hold almost 25% of the national territory and more than 80% of the forest areas are owned and administrated by the ethnic minorities. In the Amazon region in Colombia, over 20 million hectares have thus far been declared '*Resguardo Indígena*'. Although Van der Hammen (2003) suggests the indigenous populations play an important role in the conservation and sustainable use of their natural resources, to date the state provides no financial resources for the environmental sector.

State funding to the *resguardos* is confined to support education, health, infrastructure development and housing (Van der Hammen, 2003:58).

Also in Brazil, indigenous territories cover more than 20% of the Amazon (against 4% of the land protected in reserves and parks), and the number of extractive reserves recognised by the State is growing. Recently, Greenpeace assisted in the process of declaration of two extractive reserves including more than 2 million ha in the Amazon state of Para, which include recognition of indigenous rights over the land concerned. Government subsidies will be transferred only to entities with legal rights to these extractive reserves.

In their recent assessment of conservation and investment trends, Molnar *et al.* (2004) elaborately discuss the issue of community-driven conservation in the developing countries. They estimate that the current scale of community conservation in the world's forested areas is at least equal to the area currently under protection in the public protected area system. Mexico's community managed forests is an interesting case in this regard (Bray *et al.*, 2003).

A significant number of protected areas have forest-dependent or resident populations, at least a third of them include populations of indigenous peoples (Molnar *et al.*, 2004). About 50% of the 20,000 state protected areas, which were created in the past 40 years overlap indigenous customary territories (86% in Latin America) (Clay *et al.*, 2000; MacDonald, 2003). In many of these areas, issues of compensation for land or foregone income are not resolved. Of many protected areas, the actual boundaries have not been demarcated properly (Cernea & Schmidt-Soltau, 2003a; 2003b).

### ***Scope***

An analysis of the effectiveness of forest protected areas worldwide (WWF, 2004:10) shows that there remains a persistent problem in managing relations with local communities and indigenous peoples. WWF calls for the formal recognition and active promotion of Community Conserved Areas, as fundamental contributions of indigenous peoples and local communities to conserving biodiversity and maintaining cultural values. Financial support to such areas could be integrated as part of the National Biodiversity Strategies and Action Plans, as well as National Poverty Reduction Strategies. In this respect, the transfer payments to indigenous institutions according the Colombian *resguardo* model serve as an important example of how financial support to sustainable use and conservation of community managed protected areas can be organized.

### ***Advantages***

1. The formal recognition and active support to the protection of indigenous territories and other types of community driven conservation, has a large potential in terms of area. In several tropical countries, the current scale of community conservation is larger than the area currently under protection in the public protected area system.
2. New opportunities to settle land tenure issues may be created by linking debt swaps and conservation trust funds to the recognition of indigenous territories and land rights for local communities.
3. Financial support to community-based conservation is important as a means of recognizing cultural and social values of biodiversity.

### ***Limitations***

1. The political will to recognize land rights for indigenous peoples and local communities is insufficient in many situations.

## 5 Options for new international payment regimes: taxes and subsidy reform

Many forms of international taxation have been proposed to help finance biodiversity conservation. For example, the 1980 Brandt Report observed that: “various proposals to raise the international revenues have been outlined in recent years. These include placing a levy on international trade, on the arms trade, on international investment, on hydrocarbons and exhaustible minerals, on durable luxury goods, on military spending, on the consumption of energy, on internationally traded crude oil, on international air travel and freight transport, or on the use of the ‘international commons’ - ocean fishing, offshore oil and gas, sea-bed mining, the use of space orbits, radio and telecommunication frequencies and channels” (Brandt, 1980). Thus although ‘innovative’, such proposals are certainly not new.

A number of financing mechanisms representing new international payment regimes have been selected for analysis in this chapter. Those financing mechanisms were selected that either have demonstrated capability in attracting new sources of funding; or which resulted in a substantial increase of financial flows towards protected areas; or which seem promising options to raise additional revenues for protected areas in the future.

We focus on the following types of taxation:

- taxes on timber;
- the Currency Transaction Tax on international foreign exchange transactions;
- carbon taxes, including air travel taxes and taxes on bunker fuels

Furthermore, the reallocation of perverse subsidies to conservation also has been proposed as a new source of funding.

### 5.1 A regulative system for international timber trade

A regulative system for global timber trade with financial incentives for forest conservation can be envisaged as a significant contribution to raising funds for forest biodiversity conservation. An option suggested by several authors, would be to tax international timber trade, or to redirect existing taxes, so that a transfer is made from consumer to producer countries (Barbier *et al.*, 1994; Richards, 1999). This would have several advantages (Richards, 1999):

- it has a high revenue generation potential;
- unlike GEF and debt swaps, it would not divert aid from alternative development;
- it would alleviate the problem of low rent capture by producer country governments;
- the money could be channelled directly to forest conservation.

An example of the redirection of existing taxes is to reduce VAT on timber imports by industrialised countries while leaving producer margins and consumer prices unchanged. Barbier *et al.* (1994) calculate that if VAT on tropical timber imports were halved (from 15% to 7.5%), this could raise US\$  $1.5 \times 10^9$  per year and forest rent recovery in producer countries would rise by 30-80%. The amount of revenues lost to consumer countries is however estimated to be higher (US\$  $3.7 \times 10^9$ ) than the increase in revenues for producer countries. The expected difference is due to ‘leakage’ to other sectors in the tropical timber trade. It would therefore be more efficient to transfer the VAT collected. This option is expected to face political objections, including the sensitive issue of consumer nations wanting to monitor how the money is spent (Barbier *et al.*, 1994b). Furthermore, the option is liable to World Trade Organisation (WTO) regulation.

A study by the Netherlands Economic Institute indicated that a 1-3% import surcharge on tropical timber imports to the EU, Japan and US would raise US\$ 31-94 million per year with few distorting effects. An export levy would be more difficult to implement, raise less revenue and would need to be applied to all producer countries simultaneously (Barbier *et al.*, 1994). Existing international agencies, such as GEF, could set up a redistribution mechanism for the revenues of taxes on international timber trade.

The forest products sector contributes only 3% to the total international trade volume. The value of world trade in forest products was estimated at about US\$ 150 x 10<sup>9</sup> per year in 2003 according to FAOSTAT data (FAOSTAT, 2005), while the current annual turnover of forest products exceeds US\$ 200 x 10<sup>9</sup>. A tax of 1% on international trade in timber products (including paper) would thus generate an amount of revenue of US\$ 2 x 10<sup>9</sup>.

Existing international agencies, such as GEF, could set up a redistribution mechanism for the revenues of taxes on international timber trade towards.

A differentiation of the import tax on timber seems justified, in such a way that the import surcharge on Forest Stewardship Council (FSC) certified timber is less. However, to date this may not be possible as General Agreement on Tariffs and Trade (GATT) rules determine that taxes at the border may be product-based, and not process-based.

## **5.2 Currency Transaction Tax**

Despite tremendous growth in recent years, the financial markets have remained under-taxed. In the financial sector, levies can be raised from international financial transfers, or on credit card transactions. An example of a proposed charge on financial transactions is the Tobin Tax, which would provide a means to discourage destabilising speculative currency transactions. A problem with global levies is the coordination of the mechanism and the institutional framework. Who decides on the destination of the financial resources generated? National levies are easier to implement, since they depend on the government of a single country and one governmental organisation can be in charge of the enforcement, collection and allocation of the created revenues (Phillips, 2000).

### **5.2.1 Modified Tobin Tax**

The so-called modified Tobin Tax addresses this problem, by a proposed charge on international financial transactions only. This can be implemented at the level of individual countries. It has been estimated that a charge of 0.25% on all foreign exchange transactions could raise US\$ 140 x 10<sup>9</sup> annually (Panayotou, 1997).

In April 2004, the average daily turnover in foreign exchange markets was estimated at US\$ 1,900 x 10<sup>9</sup> at global level (Bank for International Settlements, 2004). The bulk of these transactions were among the currencies dollar, euro, yen and sterling. About 80% of foreign exchange is speculation (Wahl, 2005). Only a small number of banks and other financial institutions are involved: 25 actors worldwide. The tax rate should be set at a very low level in order to limit the risk of evasion and minimize market disruption. The Landau report (Landau, 2004) mentions a level of around 0.01% as an acceptable rate and indicates that such a tax should preferably not be levied on a regional basis. Nevertheless, problems of tax evasion are considered minimal by other sources.

A 0.01 % tax on US\$ 1,900 x 10<sup>9</sup> per day would yield about US\$ 47.5 x 10<sup>9</sup> per annum (based on 250 trading days per year).

This tax would be sufficient by itself to fulfil the shortfall in funding on protected areas. However, only a share of this money would be available to finance biodiversity-related projects.

A low rate of taxation of financial transactions is expected to have a small distortion effect. It would still generate a considerable, predictable and continuous flow of resources over time.

### **5.2.2 Two-tier Currency Transaction Tax**

If the tax rate is set at a low level, the problem of tax evasion is considered minimal by different sources. Therefore, it does seem worthwhile to explore the potential of a modified Tobin tax unilaterally or on a regional basis, as a pilot experience before possibly expanding such a system towards the global level.

Spahn (2002) elaborated a model for a Currency Transaction Tax that is suitable for unilateral introduction, and mitigates speculation. His so-called two-tier Currency Transaction Tax consists of two parts:

- 1) the classical Tobin Tax, but at a low rate of 0.01%
- 2) in case the amplitude of the exchange rate exceeds a threshold (a speculative attack), this speculation profit is taxed much higher.

If introduced at regional level in Europe, this tax would raise €16-18 x 10<sup>9</sup> (approx. US\$ 20-24 x 10<sup>9</sup>). Globally, the revenue is estimated at US\$ 60-75 x 10<sup>9</sup>.

The tax is technically easy to implement, with a minimal administrative burden. The problem of tax evasion is also considered minimal. The Belgian Parliament passed a law in 2004 on the taxation of international currency transactions according to the two-tier model of Spahn. This law was meant to elaborate the necessary institutional framework for the introduction of the Currency Transaction Tax in Europe and thus made the application of this tax operational.

Considerable resistance to the introduction of a Currency Transaction Tax is expected on behalf of the financial sector.

## **5.3 Carbon taxes**

National carbon taxes already exist, and are bound to increase as countries seek ways to meet their Kyoto commitments, but are less likely to be introduced at the international level. Until there is some kind of global governance system, international taxes - which would need to be applied on a multilateral basis - are unlikely to go beyond the drawing board. A survey in industrialised countries found that 70-90% of respondents favoured giving money to an environmental agency over an international tax (Panayotou, 1997). Negative distributional effects for developing countries are also an important argument for not implementing a carbon tax at global level.

### ***Carbon taxes at national level***

Costa Rica has shown significant state effort to institutionalise a system of Payments for Environmental Services (see 3.3.4). The forest services recognized by law are carbon sequestration, biodiversity conservation, hydrological regulation and scenic beauty. At its implementation in 1997 it was envisaged that payments from international sources, in particular for carbon sequestration, would provide for a large part of the funding. In practice however, the payments system is largely financed by an allocation of 3.5% of revenues from a national fossil fuel tax.

Fossil fuel taxes have been implemented in few industrialized countries. In Norway, Finland, Sweden and The Netherlands, carbon taxation schemes are in place. Both in Sweden and Norway, the carbon tax has promoted the development of cleaner energy production technologies. In Norway, a carbon dioxide tax scheme on energy use was introduced in 1991 (EIA, 2002). Initially the tax did not include civil aviation and domestic sea freight. In 1999, a carbon tax was also introduced for these sectors. Norway is the only country that applies a carbon dioxide tax on oil extraction. Recently, the country also developed a comprehensive national trading system for greenhouse gas emissions.

## **5.4 Emissions trading schemes and taxes in relation to bunker fuels**

The international aviation and shipping sectors contribute significantly to air pollution and climatic change. According to IPCC estimates, international aviation contributes about 3.5 % to global warming. If the aviation volume continues to grow at around 4 % per year, as in the 1990s, the share of international aviation in the greenhouse effect will be higher in 2010 than Germany's share in global warming (Cames & Deuber, 2004). The contributions of CO<sub>2</sub> emissions from shipping are in the same order of magnitude as those of aviation (Wit *et al.*, 2004). The volume of shipping is expected to increase by 5% per year from 2005 until 2010 (Landau, 2004).

The International Civil Aviation Organization and the International Maritime Organisation are required under Article 2.2 of the Kyoto Protocol to limit and reduce greenhouse gas emissions from bunker fuels. Two important strategies aimed at mitigating greenhouse gas emissions from bunker fuels are taxation according to the 'polluter-pays-principle' and the introduction of an emissions trading system.

The implementation of an emissions trading systems will depend strongly on negotiations in the framework of the Kyoto Protocol regarding the post 2012 commitment period. The responsibility for emissions of international transport can be allocated to the Parties by including these emissions in the national totals. As soon as the emissions from aviation and shipping are part of the national commitment, Parties may want to coordinate measures. On the other hand, emissions may also be allocated to the sector. The international aviation and maritime transport sectors will then have their own sectoral targets, which would have to be translated into national commitments.

### **5.4.1 Aviation**

The introduction of emissions trading for international aviation has been discussed for several years in the environmental committee of the International Civil Aviation Organization, ICAO (Committee on Aviation Environmental Protection CAEP).

Recent studies show that the setting up of an emissions trading system for aviation is basically possible. However, as Cames & Deuber (2004:145) make clear, "considerable latitude exists regarding the design of such an emissions trading system". At the scientific level, it has already been agreed that the total greenhouse impact of aviation is caused only partially by CO<sub>2</sub> emissions. Apart from CO<sub>2</sub>, the greenhouse impacts of water vapour, the reaction products of nitrogen oxide (ozone), methane, of contrails and cirrus clouds and, at a subsidiary level, of soot and sulphate aerosols have all to be considered. Depending on the extent of climatic impact that is attributed to cirrus clouds, the contribution of CO<sub>2</sub> was limited to 21-58 % to the climatic impact of aviation in 1992 (Cames & Deuber, 2004).

With regard to the design of an emissions trading system, it is especially important to realise that trade-offs take place between individual greenhouse-impacting substances.

A possible emissions trading system for aviation should ideally cover all substances with greenhouse impacts, in order to address the efficient reduction of the greenhouse impact of aviation as a whole.

The other way to approach mitigation of greenhouse gas emissions from aviation, is through taxation. There are three options to apply a tax on pollution related to aviation (Landau, 2004):

- A tax on consumed kerosene. To this purpose, a multilateral treaty within the framework of the ICAO would have to be signed.
- A tax on the use of air corridors, which would be proportional to the kerosene consumed by travelling along a certain route, and to the aircraft's emissions. Air space administration bodies can collect the tax on top of the normal route fees, and according to the same procedures.
- A tax on air tickets, which enables differentiation among passengers and destinations.

The first two options have the potential to yield about US\$  $10 \times 10^9$  per year for a global tax system, and would result in the increase of the average price of a ticket by about 2.5%. The third option would result in a revenue of approximately US\$  $8 \times 10^9$  per year in case of a 5% tax on business and first class tickets (Landau, 2004). This is a considerable amount and roughly 40-50 % of the estimated world-wide shortfall in protected area funding. However, only a portion of the revenue would be likely to go to funding protected areas, as revenue would be divided with other initiatives such as developing renewable energy sources.

An aviation tax would be a viable option to raise additional funds for protected areas. It is expected to generate more revenues in a more direct and transparent way in comparison to an emissions trading system for aviation. Thus, from the point of view of revenue generation, taxation is to be preferred over a complex emissions trading system.

Currently, there are a number of mechanisms to offset CO<sub>2</sub> emissions from air travel voluntarily. A Dutch example is "Cool flying", an organisation that channels payments from private air-travellers towards forest protection in developing countries.

France and the UK announced this year (HM Treasury, 2005) to implement an air ticket solidarity levy, of which the revenues will be used partly for the development of health projects in developing countries (see 2.4). This example illustrates that political will is critical to the implementation of this kind of environmental tax: governments of single countries are even willing to introduce an air ticket unilaterally, in spite of possible disadvantages in terms of competitiveness.

#### **5.4.2 Shipping**

In the past few years, the International Maritime Organisation (IMO) started research and negotiations about implementing emission mitigation strategies. However, at this stage, these negotiations have come to a stand still, "mainly because there are different views whether or not GHG emissions within IMO should differentiate between Annex 1 and non Annex 1 countries" (Wit *et al.*, 2004:6). Technical problems with allocation of the responsibility for emissions have not yet been overcome. According to Wit *et al.* (2004:7), for the shipping sector, it is unlikely that an appropriate allocation method can be set up in the short term. Currently, the EU is developing a policy aimed at emission reductions in the shipping sector. The alternative way to promote mitigation of greenhouse gas emissions from maritime shipping is by means of taxation. There are two options to apply a tax on pollution related to shipping (Landau, 2004):

- A tax on consumed fuel, which could be imposed at the destination ports.
- A tax on the utilization of sea straits, similar to a highway toll or a toll on tunnels or bridges.

Regarding the first option, a tax rate of 10% on shipping fuels would raise a global revenue of US\$  $1 \times 10^9$  per year (Landau, 2004). However, if the full negative environmental effects would be internalized, a tax rate of 150% of the fuel costs would be required. This would raise US\$  $20 \times 10^9$  per year. Taxation on fuel is expected to have a positive impact on the development of cleaner ship motors.

The second option consists of a passage fee for densely sailed sea straits. The application of a passage fee of US\$ 13,000 on average per passage seems acceptable (Landau, 2004). In comparison to the economic value of a ship cargo, usually above US\$ 5 million, the rate of such a passage fee is considered to be low. A passage fee for crossing the Channel alone would raise US\$  $1.1 \times 10^9$  per year. If other sea straits in Asia were included as well, the revenue would amount to US\$  $3.6 \times 10^9$  per year (Landau, 2004).

In both cases, tax evasion is considered more or less impossible. The only problem is that a shift from maritime freight to air transport might occur. It would therefore be necessary to tax air traffic more heavily, also because air transport results in much higher pollution levels than sea transport.

### ***Scope***

The agencies responsible for the reduction of greenhouse gas emissions from bunker fuels, ICAO and IMO, have not been able to agree on any action to ensure effective implementation of mitigation policies to reduce greenhouse gas emissions from international aviation and shipping, other than agreeing on best practice in terms of air traffic management operations, in the case of ICAO.

The European Commission believes that bringing aviation into the European Emission Trading System offers the most promising way to tackle aviation emissions. The Commission examined several other types of market-based solutions, including taxes on airline tickets, departure taxes and emissions charges, but thought that these would be less effective in reducing emissions or less cost-efficient.

As follows from Wit *et al.* (2004), allocation of the responsibility of emissions from aviation and shipping is crucial for setting up any emission-trading scheme. This is both methodologically and technically challenging. It will probably take considerable time before applicable methods for the shipping and aviation sectors will have been developed and politically agreed upon. In the short term, reporting requirements of fuel consumption should be promoted.

### ***Conclusions***

The substantial contribution of the impacts of greenhouse gas emissions from bunker fuels and the growth of the aviation sector, underline the urgency of the development of an acceptable emission-trading or taxation scheme. Compensation of emissions from bunker fuels could lead to more investments into carbon sinks and thus to carbon sequestration projects through reforestation en restoration of protected areas, buffer zones, and ecological corridors.

In the short term voluntary non-Kyoto contributions may be tapped more, which may be stimulated by governments. From the point of view of direct revenue generation, taxation is probably to be preferred over complex emissions trading systems.

## **5.5 Scope of new international taxes**

The Currency Transaction Tax would probably raise most money and discourage destabilising speculative currency transactions, but would not result in direct environmental benefits. Carbon taxes and timber taxes would have the largest environmental impact and have intermediate potential to generate additional resources.

### ***Advantages of (environmental) tax mechanisms***

Phillips (2000:37) mentions several potential advantages of using tax mechanisms to generate income flows for conservation:

1. Tax-based mechanisms for the generation of income flows for conservation may generate financial resources “nationally, reliably and sustainably”.
2. The burden of the payment can be targeted towards actors causing environmental degradation.
3. Accountability for the implementation of conservation is to the public and not to a specific donor agency.

Additionally:

4. Tax mechanisms do not divert aid from alternative development activities.

### ***Limitations***

1. The political will required to set up new taxation regimes can be considerable. This holds particularly true for international taxation mechanisms.
2. WTO rules need to be evaluated: to what extent can certain (environmental) taxes and charges be accommodated?

## **5.6 Reallocation of perverse incentives**

James *et al.* (2001), indicate that costs of global conservation are considerably less than government expenditures of environmentally harmful subsidies (agriculture, forestry fishing, mining, freshwater use). Governments spend this money to keep resource prices below the market level. These subsidies however encourage the over-exploitation of the natural environment (Pearce, 2002; Robin *et al.*, 2003). Reduction of 10% of perverse subsidies to be invested in conservation (James *et al.*, 2001) could be enough to conserve the world's biodiversity.

The CBD (2005c) currently considers ways and means to remove or mitigate perverse subsidies. Several authors have pointed at the removal of perverse subsidies harming biodiversity (see Myers & Kent, 2001) and the redirection of agricultural and fishing subsidies to conservation practices as a potentially major source of revenue for biodiversity conservation and protected areas.

### ***Scope***

Balmford & Whitten (2003) found an annual US\$ 1,000-2,000 x 10<sup>9</sup> are spent on perverse subsidies. Only a small fraction of this money would be sufficient to address the money shortfall on protected areas. About two thirds of the perverse subsidies occur in OECD countries. The scope of the mechanism for conservation is related to the two sides of the same coin: reduction of perverse subsidies would significantly reduce biodiversity loss, while this money could be redirected to financing of protected areas in the South.

However, as Spergel (2004:10) argues, these mechanisms can be expected to generate great political resistance by lobbies representing farmers and fishermen.

Transformation of EC agricultural subsidies into payments for conservation represents an important option: within a few years this will lead already to considerable savings that could be channelled towards alternative destinations.

***Advantage***

Redirection of a small fraction of perverse subsidies is enough to finance an effective global network of protected areas.

***Limitation***

Reallocation of perverse subsidies to conservation requires political will and international cooperation. It is therefore considered a long-term option. The option of reallocation of EU agricultural subsidies to conservation is an exception as this could be implemented within a few years time.

## 6 Synthesis and Discussion: raising the money and spending it wisely

### 6.1 Relative importance of existing conservation finance mechanisms

Table 4 lists estimates provided by Molnar *et al.* (2004) of conservation investments in developing countries according to different types of financing mechanisms. National park budgets are the largest source of conservation finance in developing countries, with US\$ 1.3-2.6 x 10<sup>9</sup> spent annually, according to estimates by Khare (2003) cited in Molnar *et al.* (2004). Estimated ODA investments in developing countries are in the range of US\$ 350-420 million, down from US\$ 700-770 million in the early nineties. This is confirmed by James *et al.* (1999:4) who conclude that grants by international donor agencies peaked at the 1992 Rio de Janeiro Earth Summit, but have experienced a steady decline over last 10 years.

Investments of private foundations such as the US based Mac Arthur, Rockefeller Brothers, Packard, Moore, Turner and Goldman Foundations account for US\$ 150 million annually.

Molnar *et al.* (2004) also point out the crucial role communities play in conserving forests: “Communities have been documented as spending significant amounts of time, labour and financial resources on forest management and conservation activities; project reports from programs supporting community forestry roughly estimate them at US\$ 1.2-2.6 x 10<sup>9</sup> per year” (Molnar *et al.* 2004:12).

Some conservation finance mechanisms have received much public attention, but have not generated large amounts of revenue. Examples are bio-prospecting, carbon sequestration projects, commercial debt-for-nature swaps and public-private partnerships. This could be for a variety of reasons, e.g. expectations regarding market development were too high, the potential revenue cannot be realized, or the practicalities might be overwhelming. Less ‘appealing’ instruments have generated the bulk of revenues for nature conservation for years.

Source of investment	Investment (US\$ x 10 <sup>6</sup> )
Community Initiatives(civil society) <sup>a</sup>	1,300-2,600
State allocations to national park budgets	1,600
ODA (bilateral and multilateral mechanisms)	350-420
Philanthropy: donations from (international) civil society	150
Private reserves; conservation trust funds (multi-actor arrangements) <sup>b</sup>	10

<sup>a</sup> This category also includes in-kind contributions from local communities.

<sup>b</sup> This category specifies funds from taxes, levies, environmental services payments etc., separate from ODA.

**Table 4. Estimates of annual conservation investments in developing countries, according to Molnar *et al.*, 2004.**

Public in-country government investments are thus the single largest source of financing in most developing countries. Nonetheless, as Molnar *et al.* (2004: 12) argue, “international financing is key for particular countries. In Brazil, it constitutes 75% of the conservation funding, and in several megadiverse African countries, it constitutes 50% of all funding”.

Although often cited, the above estimates of Molnar *et al.* (2004) are based on an unpublished and publicly inaccessible study by Khare (2003). Therefore, the accounting methods underlying the above data remain unclear and we cannot say much about their reliability.

### ***The role of bilateral and multilateral aid***

The funding shortfall for protected areas is particularly large in developing countries. Most developing countries make domestic conservation investments (and often have to lend money for this purpose). This funding source is important both in real terms and as a demonstration of political commitment. However, most of these countries cannot provide sufficient resources while bearing the opportunity costs to adequately support conservation: therefore these countries largely depend on assistance from donors (Lapham & Livermore, 2003:6).

Many developing countries could obtain financial and technical support from partner donor countries for the implementation of the CBD Programme of Work on Protected Areas. But biodiversity conservation is often not included as a priority within bilateral agreements for development infrastructure projects, health projects etc. The potentially available donor money for protected areas is not requested by developing countries. This is even more critical, as natural ecosystems often represent important ecological capital to poor people and therefore their only form of wealth, from which they can derive income (Vedeld *et al.*, 2004; WRI, 2005). Biodiversity conservation should therefore be an important fundament for the achievement of the MDGs.

For over 25 years, bilateral and multilateral government donors have supported biodiversity conservation in developing countries and to date governments remain by far the most important source of biodiversity and conservation funding. In spite of the importance of bilateral and multilateral mechanisms, these have insufficient capacity in addressing the funding shortfall adequately. In addition, transparency in the records of expenditure into protected areas should be improved.

Contributions by governments of developed countries remain by far the largest external source of funding for protected areas, in addition to contributions by developing countries themselves. In spite of the commitments in the framework of the CBD and the WSSD:

- bilateral funding of protected areas decreased
- multilateral funding for biodiversity-related activities is considerable, but protected area funding decreased.

### ***Role of innovative financing mechanisms***

According to Spergel (2004:6) the conservation financing mechanisms that have been able to generate the largest amounts of financing for protected areas include national government budget allocations for protected areas; grants by international donor agencies, including grants for conservation trust funds; grants from private foundations; grants by international NGOs such as WWF, IUCN, CI, TNC, Wildlife Conservation Society, Birdlife International, Flora and Fauna International, etc.; and visitor entry fees. Most of these mechanisms do not represent the more innovative multi-actor institutional arrangements or property rights approaches.

Property rights approaches including conservation concessions and multi-actor arrangements such as debt-for-nature swaps, PES, and conservation trust funds have drawn a lot of public attention. These mechanisms all have specific advantages and limitations, which have been evaluated in previous chapters. Property rights approaches are mechanisms used for spending of money, rather than raising funds.

Bilateral debt-for-nature swaps have important potential to raise revenues in addition to traditional development aid and are often combined with conservation trust funds to channel the revenues towards protected areas. Conservation trust funds have a strong potential to provide long-term financing and are an important means of bundling funds from different sources and of decentralizing them.

PES could be more widely applied in relation to conservation on private lands and in support of protected areas managed by local communities and indigenous organizations, and has an important potential in capturing the willingness to pay of developed countries for global environmental services.

Multi-actor arrangements are promising and have demonstrated capability to raise additional funds for protected areas, on top of ODA sources of finance. These mechanisms have certainly scope for wider application. However, the majority is more suited to application at individual project level, rather than enabling a global network of protected areas. The money raised in support of protected areas through innovative multi-actor arrangements equals less than 1% of the estimated shortfall. The volume of money raised and spent through these mechanisms has increased over the last decade and will probably continue to increase, but this will be far from sufficient to bridge the financing gap. Conservation trust funds and PES may act as important distribution mechanisms, but the potential to apply these mechanisms more widely depends on the disbursement of large sums of money at once (in the case of establishment of trust funds) or as a sustainable source of income over a long time period (PES).

## **6.2 New international taxation systems**

Considering the funding shortfall of protected area financing, in particular in the South, new approaches are necessary to raise more money. Global taxation systems have an important potential to provide these necessary funds.

The estimated annual costs to create and manage a representative global system of terrestrial protected areas are at least US\$ 20 x 10<sup>9</sup> Balmford *et al.* (2002). This is approximately 0.05% of global GDP and 0.2% of tax revenue (World Bank, 2002). In addition, the estimate of economic damage due to illegal logging in developing countries is in the same order of magnitude: US\$ 10-15 x 10<sup>9</sup> annually through loss of revenues to forest owners, industries and governments (World Bank, 2004).

Regarding the collection of tax revenues, there is a clear need for the establishment of international taxation systems. Transnational companies are increasingly non-labile to paying national taxes, while they are responsible for negative environmental and social impacts of resource exploitation. Accountability cannot be achieved at the national but rather at the international level.

International taxes have the potential to ensure the predictability and continuity of financing flows for biodiversity conservation over long time horizons. Problems of burden sharing and recurrent negotiating procedures could in this way be eliminated.

Options for new taxes were evaluated on the basis of their global applicability, and the possibility to administer the collection and redistribution of revenues through international agencies. The following types of tax have the largest potential to raise income for a global network of protected areas.

- 1) Carbon tax: air travel and shipping taxes, and taxes on domestic fossil fuel consumption
- 2) Timber tax: on international trade; with reductions for FSC certified timber, if allowed by WTO rules
- 3) Currency Transaction Tax on international foreign exchange transactions.

### ***Carbon taxes***

Carbon taxes could raise money for a variety of relevant projects, including the promotion of renewable energy, but could also raise money for protected areas. Biodiversity conservation is key to maintaining healthy ecosystems and contributing to mitigation and adaptation to climate change. In particular the conservation of forest and peat ecosystems would prevent the loss of terrestrial sinks and stocks of carbon, which is a function man-made ecosystems cannot fulfil to the same extent.

Examples of national carbon taxes already exists in Costa Rica, Finland, Norway, Sweden and The Netherlands and this is bound to increase as countries seek ways to reduce carbon dioxide emissions as to meet their Kyoto commitments.

Any linkage of biodiversity protection to tradable credits for carbon emissions under the Kyoto Protocol could be regarded as a perverse subsidy. Therefore, many environmental and conservation NGOs prefer to avoid such tradable credits because these would threaten to lessen the necessary reductions of fossil fuel emissions of carbon, the primary goal of the Kyoto Protocol.

Application of carbon taxes should be sought in areas not covered by the Kyoto Protocol, notably the international aviation and shipping sectors. These sectors contribute significantly to air pollution and climate change. The substantial greenhouse gas emissions from bunker fuels and the growth of both sectors make these important areas for a potential carbon tax scheme. Mandatory taxes to offset carbon emissions from air travel and shipping could raise considerable revenues, of which a proportion could be earmarked for protected areas, particularly including forests and peat ecosystems.

Taxes related to aviation can be applied on consumed kerosene, directly on air tickets, or on the use of air corridors. The latter option has the advantage that the tax can be collected by air space administration bodies on top of the normal route fees, and according to the same procedures. Besides taking into account the amount of kerosene consumed along a certain route, also the aircraft's emissions can be considered. The tax rate would thus be linked to the level of pollution and greenhouse gas emissions, which may lead to reductions of the emissions generated by the aviation sector by technological innovations. The three aviation tax options have each the potential to yield US\$ 8-10 x 10<sup>9</sup> per year for a global tax system, and would result in modest increases in the price of air tickets (Landau, 2004).

Analogue to this, in the shipping sector taxes could be imposed on fuels, and on utilization of frequently used sea straits. The fuel tax would raise US\$ 1-20 x 10<sup>9</sup> per year, depending on the degree to which environmental costs are internalized in the fuel cost price. If a passage fee of US\$ 13,000 were applied per passage through the Strait of Dover, US\$ 1.1 x 10<sup>9</sup> would be raised, whereas the inclusion of densely sailed sea straits in Asia would yield a total amount of US\$ 2.3 x 10<sup>9</sup> per year (Landau, 2004). A fuel tax has the most direct relation with the negative environmental impacts caused by shipping and could thus lead to mitigation of pollution and greenhouse gas emissions. The fee on utilization of sea straits may be easier to implement.

Only a portion of the revenues from taxes on aviation and shipping would likely be allocated to funding protected areas as revenue would be divided with other initiatives such as developing cleaner transport systems or poverty alleviation. Nonetheless, aviation and shipping taxes would be a viable option to raise additional funds for protected areas.

The Landau report (Landau, 2004) concludes that environmental taxes on aviation and shipping are technically feasible and that these would be able to raise significant, stable and permanent sources of finance. The most critical issue in setting up such taxation schemes is that these require strong international consensus on the tax basis and tax rate, and on international arrangements for collecting and redistributing the revenues. This implies that countries would hand over some degree of sovereignty.

### ***Regulative system for international timber trade***

The forest products sector contributes only 3% to the total international trade volume. The value of world trade in forest products was estimated at about US\$ 150 x 10<sup>9</sup> per year in 2003 (FAOSTAT, 2005), while the current annual turnover of forest products exceeds US\$ 200 x 10<sup>9</sup>. A tax of 1% on international trade in timber products (including paper) thus would generate revenue of US\$ 2 x 10<sup>9</sup>.

A regulative system for international timber trade with financial incentives for forest conservation would imply a significant contribution to raising funds for forest biodiversity conservation. Thus, whilst a timber tax could raise only a part of the revenues required for a global network of protected areas, the advantage is that this could be channelled directly into forest conservation, as forests represent several of the most threatened biomes.

A suggested mechanism for channelling international payments linked to timber trade taxation, is to make area-based payments to forest management units to compensate for the additional costs of sustainable natural forest management (Bach & Gram, 1996). However, this clearly could be considered a forestry subsidy. Only at very low extraction levels, or in the case of sustainable use of Non-Timber Forest Products, it can be justified that area-based payments would act as financial compensation for ecosystem services provided by natural forests. Financial compensation would then take the form of PES.

GEF could be in charge of co-ordinating the distribution of revenues of a timber tax. PES and conservation trust funds are identified as important distribution mechanisms to spend the money on forest conservation.

One option is to apply lower timber taxation rates on Forest Stewardship Council (FSC) certified wood products, in order to encourage use of timber from sustainable forestry operations. The viability of this option depends on the current review of relevant GATT/WTO rules. According to GATT rules, taxes imposed at the border can be product-based and in principle not process-based. WTO is currently reviewing the regulation of trade in environmental goods and services.

### ***Currency Transaction Tax***

Both the Rapport Quadripartite (2004) and the Landau report (Landau, 2004) conclude that a tax on foreign exchange transactions is technically feasible. Such a tax has considerable potential for raising funds for development, including biodiversity conservation in the South. As concluded in Chapter 5 (section 5.2), a modified Tobin tax of 0.01% on foreign exchange transactions would yield about US\$ 47.5 x 10<sup>9</sup> per annum. The two-tier Currency Transaction Tax according to the model of Spahn would generate US\$ 60-75 x 10<sup>9</sup> at global level, but could be introduced at regional level or unilaterally as well.

If applied at global or regional level, a tax on international financial transactions requires international co-ordination of the mechanism and a proper institutional framework. Who decides on the destination of the financial resources generated? However, if part of the revenues would be spent towards benefiting the environment, this money could be allocated to existing international agencies, in particular GEF.

Besides implementation problems that need to be overcome, the political will required to set up new taxation regimes is considered a major bottleneck. This holds particularly true for international taxation mechanisms.

Table 5 shows a comparison of all the new international taxation systems considered with the funding shortfall for the implementation of a global network of terrestrial protected areas. From this, it is clear that such taxes do have a potential to close the funding shortfall. Indeed, the Currency Transaction Tax has potential to close the gap completely although, in practice, the money raised would be unlikely to all be directed towards terrestrial protected areas. However, a combination of these taxes could be effective in providing the necessary funding, especially to developing countries where the funding shortfall for protected areas is most acute.

<b>Funding shortfall</b>	<b>Amount (US\$ x 10<sup>9</sup>)</b>
Estimated for a global network of terrestrial protected areas, Balmford <i>et al.</i> (2002)	20
<b>Type of tax</b>	<b>Amount (US\$ x 10<sup>9</sup>)</b>
Timber tax (at 1 %)	2
Aviation tax	8-10
Shipping tax (fuel)	1-20
Shipping tax (passage)	1.1-2.3
Currency Transaction Tax (0.01% on foreign exchange transactions)	47-75

**Table 5. Comparison of funding shortfall for a global network of terrestrial protected areas and the amounts that could be raised by new international taxation schemes.**

### 6.3 Increasing the effectiveness of protected area expenditures

Systematic planning of protected area systems is necessary to prevent their isolation from other habitat, their size being too small, or the lack of key components (Dudley & Pressey, 2001). More efforts should be made to increase the connectivity among protected areas. National conservation strategies need to be developed, including a specification of which protected areas need to be expanded, where buffer zones or ecological corridors need to be established, and the costs of implementation.

Protected areas may suffer from many different types of threats. The causes for these threats as well as the level of threat may vary widely, while it may be difficult to analyse threats, since the most serious threats are not always the most obvious, and not necessarily easily observable through local visits and interviews (IUCN, 1999:6). The most important threats to forest protected areas, according to WWF (2004:4) are: 1) poaching, 2) encroachment, 3) logging and 4) extraction of NTFP's. In order to improve the effectiveness of protected areas, WWF highlights the fundamental importance of carrying out site-specific management effectiveness evaluations (WWF, 2004:3).

These evaluations will probably affect the estimates of the levels of funding required to increase the effectiveness of managing each specific protected area. Impacts of climate change have often not yet been considered in evaluations of management effectiveness.

Complex networks of flows of money between aid donor and recipient make it difficult to estimate how much is spent on biodiversity conservation as part of development aid. The flows of money between donor organization and the effective investment into protected area management often involve several intermediary organizations. This results in less efficient spending of money, due to the administrative overhead of each organization involved. The monitoring of conservation effectiveness, an evaluation of costs and benefits of conservation, and learning from different experiences are also seriously hampered by a lack of transparency in the allocation of money for conservation.

Another reason why money for conservation is hard to trace back, is that a large share of the investments goes to support for conservation and development projects, in which biodiversity conservation is just a component. Stolton & Dudley (1999:36) argue that although integrated conservation and development projects (ICDPs) have attracted much international funding in recent years, “the results of this approach have often been disappointing compared with those that provide direct support for enforcing regulations, even though the latter approach has become unfashionable among development assistance agencies.” They argue ICDPs may be more successful in the long term (20-30 years), while regulation and control are important in terms of generating impacts in the short term.

## 7 Conclusions and Recommendations

### 7.1 Conclusions

Contributions by governments of developed countries remain by far the largest external source of funding for PAs, in addition to contributions by developing countries themselves. In spite of the commitments in the framework of the CBD and the World Summit in Johannesburg:

- bilateral funding of PAs decreased
- multilateral funding for biodiversity-related activities is considerable, but PA funding decreased.

Impoverishment and environmental degradation often go in hand in hand. Ecosystems in natural or semi-natural state represent important ecological capital to poor people. It is often the only form of wealth they have and from which they can derive sustainable income. Financing for protected area implementation should therefore be framed into the broader context of environmental resource management and sustainable development (Millennium Development Goal, MDG 7).

Complex networks of flows of money between aid donor and recipient make it difficult to estimate how much is spent on biodiversity conservation as part of development aid. Allocation of money for protected area management is also difficult to trace back because it is often a non-quantified component of broader biodiversity conservation activities.

#### *Debt-for-nature swaps*

Debt-for-nature swaps have an important potential in raising money for biodiversity conservation additional to ODA and the allocation of its proceeds therefore does not compete with other aid targets. Also in relation to current debt reduction programmes such as the HIPC Initiative, there are opportunities to cancel part of the debt in turn for investments of the creditor country into nature conservation.

#### *Conservation trust funds*

Conservation trust funds have a strong potential to provide long-term financing and are an important means of bundling funds from different sources and of decentralizing them. Crucial issues for improvement of trust funds are:

- transparency of allocation of resources
- participation of relevant stakeholders and representation in the Board of trust funds is essential
- active government support; conservation activities in line with national conservation strategy.

#### *Payments for Environmental Services*

Payments for Environmental Services have an important potential as a mechanism of payment for conservation on private lands in buffer zones and ecological corridors, and for protected areas managed by local communities and indigenous organizations. They are also important in capturing the willingness to pay on behalf of the global community for global environmental services, notably biodiversity conservation and carbon sequestration.

Issues for improvements of PES are:

- incorporation of poverty goals
- extension of water funds to include payments for other environmental services
- inclusion of additional, sustainable sources of funding (e.g. carbon tax in Costa Rica)

### ***Scope of new international taxes***

- Global taxation systems have an important potential to provide the necessary funds to close the funding gap for terrestrial protected areas.
- The revenue generated by new taxation systems, including taxes on timber trade, carbon taxes and the Currency Transaction Tax on international financial transactions, could contribute to offsetting the gap between conservation monetary needs and current expenditure.
- These tax schemes should be viewed as additional sources of income, rather than a replacement for current multi and bi-lateral donor mechanisms.
- Carbon taxes and timber trade taxes would have the largest environmental impact and have intermediate potential to generate additional resources.
- The Currency Transaction Tax would probably raise most money and discourage destabilising speculative currency transactions.
- Revenue from taxes would have to be clearly earmarked for protected areas to have direct environmental benefit.
- The political will required to set up new taxation regimes can be considerable. This holds particularly true for international taxation mechanisms.

### ***Reallocation of perverse subsidies***

Reallocation of perverse subsidies to conservation requires political will and international cooperation. It is therefore considered a long-term option. The option of reallocation of EU agricultural subsidies to conservation is an exception as this could be implemented within a few years time.

## **7.2 Recommendations**

### **1) Bilateral and multi-lateral mechanisms**

According to international commitments, developed countries should pay a substantial share of biodiversity conservation in developing countries; it is therefore recommended to:

- Direct a larger share of bilateral development cooperation funds to biodiversity conservation.
- Spend a fixed percentage of Gross Domestic Product (GDP) on biodiversity conservation as part of overall ODA investments.
- Address protected area funding more explicitly in the process of implementation of the MDGs and Poverty Reduction Strategies.
- Promote the application of debt-for-nature swaps, also in the framework of debt reduction programmes such as the HIPC Initiative.
- Promote priority setting on behalf of developing countries on biodiversity including protected areas and the development of national conservation strategies.
- Increase the effectiveness of conservation efforts by shortening the flows of money between donor organization and the effective investment into protected area management, involving less intermediary organizations.
- Improve transparency by standardizing reporting on raising and spending money in support of protected areas, on behalf of:
  - donor governments
  - GEF and multilateral development banks
  - conservation NGOs

- Improve transparency in raising and spending of money for conservation at the level of implementation mechanisms such as trust funds and PES.

## **2) Conservation trust funds**

Improvement of conservation trust funds could be made by increased:

- participation of relevant stakeholders and representation in the Board of trust funds
- active government support; conservation activities should be in line with national conservation strategies and policies
- transparency of allocation of resources

## **3) Payments for Environmental Services**

The potential of Payments for Environmental Services programmes to benefit protected areas would be enhanced by:

- targeting these payments to private lands within buffer zones and ecological corridors, and to nature reserves managed by local communities and indigenous peoples
- incorporating the goals of poverty alleviation more explicitly in PES
- bundling environmental services, e.g. by extending water funds to include payments for carbon sequestration and biodiversity conservation by the global community
- seeking additional sources of sustainable funding (e.g. carbon tax in Costa Rica).

## **4) Support to community-based conservation**

Support to community-based conservation recognizes cultural and social values of biodiversity protection and would be aided by:

- recognising the legal rights of indigenous peoples over their territories and securing land tenure rights of local communities
- strengthening the capacities and increase participation of indigenous organizations and local communities involved in conservation
- providing financial support for sustainable management of extractive reserves (e.g. according to the *resguardo* model in Colombia) and community driven conservation.

## **5) New international taxation schemes**

This report urgently recommends investigation of the potential for increasing revenues by designing and implementing innovative tax schemes at the international level:

- Regulative system for international timber trade. In particular, attention should be paid to the international organisations that could collect such a tax and channel revenue into forest protected areas. A substantially lower tax for FSC certified wood products is recommended, provided that this does not contradict future WTO regulation.
- Carbon tax system. Taxes can be applied to aviation and maritime transport fuels, use of air space or sea straits, or airline ticket sales. In particular, this requires addressing the question how a proportion of such funds could be channelled into protected areas, recognising the important role of intact ecosystems as carbon stocks.
- Currency Transaction Tax on international financial transfers. In particular, this requires international consensus on the institutional framework that would allow such a tax to be regulated and revenue distributed to biodiversity conservation, notably protected areas.

## **6) Reallocation of perverse subsidies**

This report recommends exploration of the potential to reallocate perverse subsidies for agriculture and forestry towards biodiversity conservation, recognizing that this is probably a long-term option, but that current perverse subsidies are detrimental to biodiversity conservation.

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## **Annex 1            Institutional aspects of ODA**

### **Bilateral mechanisms**

#### ***Bilateral aid***

National governments of developed countries provide aid in support of protected areas in the South in various ways. Development assistance agencies provide bilateral and multilateral ODA (Official Development Assistance), as well as funding through non-development channels. This chapter deals with different forms of bilateral aid to protected areas.

According to Lapham & Livermore (2003), virtually all donor countries provide some level of biodiversity assistance directly to developing nations. France, Germany, Japan, the Netherlands, the United Kingdom and the United States can be identified as the six countries that provide the largest aggregate amount of official development assistance (ODA). These countries also appear to provide the largest flows of finance in support of biodiversity (Lapham & Livermore, 2003), although assistance provided by other countries (e.g. Australia, Austria, Belgium, Canada, Denmark, Finland, Norway and Switzerland) is significant as well and may actually represent a larger financial commitment as a percentage of GDP.

#### ***Non-development funding sources***

Institutions with a development mandate provide the largest share of public biodiversity assistance. Other government agencies, including ministries of foreign affairs, of environment and natural resources and of finance, as well as NGOs are an important complement to the development institutions. Ministries of the environment often manage a number of international conservation programs, while ministries of finance may be involved in debt-for-nature swaps (see Chapter 3).

An example of non-development government funding is the US Department of Interior's Fish and Wildlife Service (USFWS) that provides special funds for specific species (Lapham & Livermore, 2003:15).

### **Multilateral mechanisms**

Various organisational frameworks exist for channelling financial assistance from multiple developed countries to conservation projects in developing countries. The most important organisations include GEF, the World Bank and UN agencies, such as the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP) and United Nations Educational, Scientific, and Cultural Organisation (UNESCO) and the United Nations Food and Agriculture Organisation (FAO). Important regional institutions include the African, Asian and Inter-American Development Banks.

#### ***Global Environment Facility (GEF)***

GEF was established in 1991 as an experimental facility to forge international cooperation and finance actions to address for threats to the global environment. At the 1992 Rio Summit, the Global Environment Facility was designated as the financing mechanism of the Convention of Biodiversity (CBD) and the leading multilateral institution and source of funding to address threats to biodiversity in the focal areas of biodiversity loss, climate change, degradation of international waters, ozone depletion, persistent organic pollutants and land degradation. GEF brings together 176 member governments, leading development institutions, the scientific community and a wide spectrum of private sector and non-governmental organisations (GEF, 2003a).

The GEF Council is made up of 12 representatives of donor-country constituencies, 12 representatives of developing-country constituencies, and 2 representatives of constituencies of countries with economies in transition (Lapham & Livermore, 2003). GEF projects are carried out by three Implementing Agencies (the World Bank, UNEP and UNDP) plus seven recently added Executing Agencies.

GEF disburses grants to fund the ‘incremental costs’ of achieving global environmental benefits. Thus, GEF projects require significant co-financing, which comes from developing country governments, GEF Implementing and Executing Agencies, bilateral and multilateral agencies, NGOs, and the private sector. GEF emphasizes the catalytic role of its financial support, striving to achieve benefits beyond the scope of individual projects. GEF distributes funds for projects with global benefits in the focal areas of biodiversity, climate change, international waters, ozone layer depletion, persistent organic pollutants (POPs) and land degradation.

The GEF emphasizes funding of country-driven activities. Most GEF funding goes to projects addressing long-term biodiversity conservation and sustainable use in GEF operational programs for different types of ecosystems. GEF also supports assistance in the form of enabling activities that help countries to implement the objectives of the CBD, including programs to promote biodiversity conservation and sustainable use at the national level. Furthermore, GEF also provides funding for the Small Grants Program, implemented by UNDP.

The five largest contributors to GEF are the US, Japan, Germany, France and the UK. Developed country parties commit funds to the GEF for periods of four years. The first commitments of 1994, totalling US\$ 2,023.37 million have been followed by “replenishments” in 1998 and 2002 of US\$ 1,982.62 and US\$ 2,279.01 million respectively. The total amount Parties have committed to GEF until 2006 thus accounts for US\$ 6,285 million (Lapham *et al.*, 2003:43).

### ***Multilateral banks***

Most multilateral banks have poverty alleviation as their prime mission. Projects submitted to multilateral banks and other development agencies must have the backing of the appropriate government agencies. An exception is the Inter-American Development Bank, which also finances NGOs directly. Multilateral development banks are not only important for funding. They are also important sources of technical advice, fund leverage capability and they often have an important impact on policy development. (Gutman, 2003:23).

Development banks provide two main types of financing of conservation:

1. Loans and grants for protected areas- as part of a national conservation programme.
2. Financing of conservation as a compensation for negative impacts of bank-funded infrastructure development.

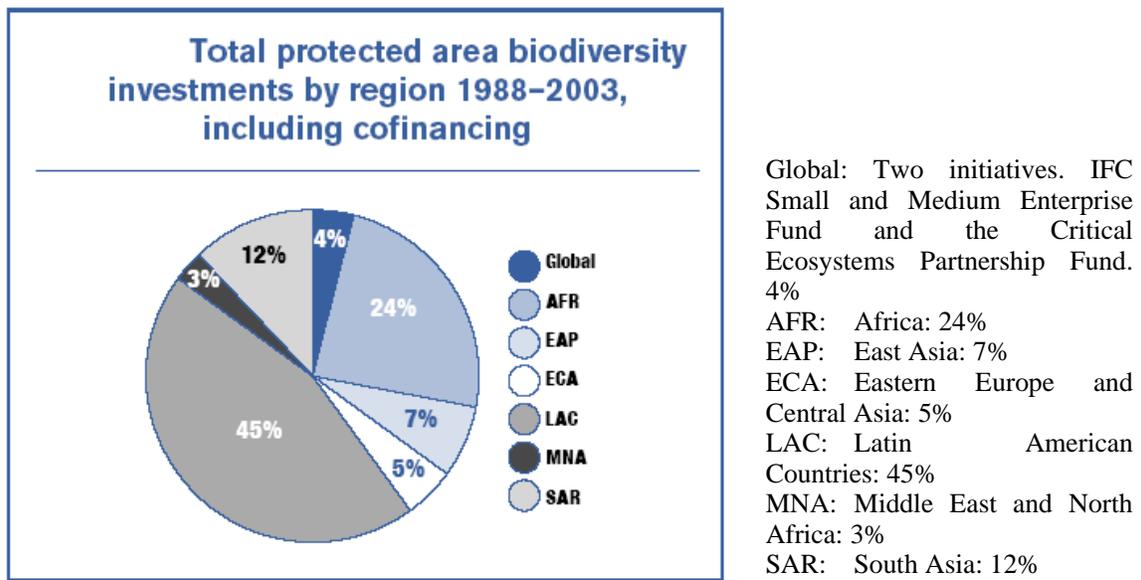
### ***World Bank***

The World Bank is the largest multilateral bank supporting biodiversity projects. It finances projects in eligible hotspots and critical ecosystems identified by Conservation International (CI) and in most of the 200 eco-regions highlighted as conservation priorities by WWF (World Bank, 2003:3). The projects are financed through the International Bank for Reconstruction and Development (IBRD), International Development Association (IDA), the Pilot Program to Conserve the Brazilian Rainforest (RFTF) and the Global Environment Facility. The protected area portfolio includes regular Bank lending projects as well as regular and medium-sized GEF projects.

Client governments have borrowed 30% of the total investment (US\$ 968.5 million) through *IBRD loans* or *IDA credits*. *Grants* comprise 27% (US\$ 866.4 million), of which 89.4% through the Global Environment Facility (US\$ 820.2 million). The Pilot Program to Conserve the Brazilian Rainforest (US\$ 21.2 million) and the Development Grant Facility (US\$ 25 million). The remaining 43% (US\$ 1,399 million) represents *co-financing* and *parallel financing*.

Special World Bank funds such as the Development Grant Facility (DGF) and the Bank-Netherlands Partnership Program (BNPP) represent a small, but growing source of funding for protected areas. They support partnership activities such as the World Bank/WWF alliance for Forest Conservation and Sustainable Use, Critical Ecosystem Partnership Fund, and the Global Invasive Species Programme (World Bank, 2003:3). The International Finance Corporation (IFC) is the private sector partner of the World Bank and contributes to biodiversity conservation and management through private sector investments as well as GEF grants.

Figure 2 shows the distribution of biodiversity funding through the World Bank. The Latin America region clearly leads the investments, with US\$ 774.7 million.



**Figure 2. Distribution of World Bank (co-) funding by region.** (World Bank, 2003:4).