Global Monitoring Report 2010 – Innovative Financing for Biodiversity

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Executive Summary

This report is the first response to the request, by the Conference of the Parties to the Convention on Biological Diversity, to prepare periodic global monitoring reports on the implementation of the strategy for resource mobilization. It looks at the funding trends revealed by the Rio markers on biodiversity of the Organization for Economic Cooperation and Development/Development Assistance Committee, national reports of Parties, trends in funding to Global Environment Facility, and funding flows through a selected number of the large international non-governmental organizations. Further information on certain innovative financial mechanisms is analyzed on the basis of the results of the Bonn Workshop on Innovative Financial Mechanisms held in January 2010.

The report identifies the following key trends:

Innovative international agreements are key to resource mobilization for biodiversity objectives

International and regional environmental conventions and agreements have proved to a successful tool to catalyze financial support to the global biodiversity agenda. Since the early 1970s, a range of global and regional environmental instruments have been created to help make biodiversity objectives available in international financial discussions. But the financial momentum generated by these agreements can dissipate easily and rapidly. Continuous innovations are thus required in order to mobilize adequate and predictable resources for biodiversity objectives.

National financial support to biodiversity can be too insignificant to be visible in national budgetary reports, and is often discretionary in nature

Because of the relative insignificance, there is ample fiscal space for adjusting up national budgetary allocations to biodiversity. National biodiversity strategies and action plans have provided longer-term perspectives for national resource mobilization, and as a result, many Governments have begun to consider biodiversity in their national budgets. But national budgetary priorities are constantly shifting, in particular following major political events and external disturbances. Biodiversity tends to be among the first to cut in a stringent fiscal environment, and an improving fiscal stance does not automatically result in a recovery in budgetary allocations to biodiversity. Shorter-term tools or platform, such as country-specific resource mobilization strategies, must be developed in order to keep up with the reality of national budgetary reallocations.

Global Environment Facility can have more to celebrate, but remains to be fully utilized

It took six years for the Global Environment Facility (GEF) to get established and formalized as the institutional structure to operate the financial mechanism of the Convention, and on average less than two years to introduce reforms to its architecture. The recent reforms pursued at the GEF have demonstrated its flexibility to adapt to challenging operational environments. But the Conference of the Parties to the Convention must fulfill its share of responsibilities in terms of enhancing the resourcing base of its financial mechanism.

The decade-long increasing trends in bilateral assistance to biodiversity were reversed in the year 2008, while …

The global target to reverse loss of biodiversity was not met by 2010. Globally speaking, official development assistance continues to grow in the past few years, and these destined for biodiversity benefited from this increasing trend. However, competing demands and reprioritizing within the donor community have turned out to be unfavourable for global biodiversity agenda, and the year 2008, for which the most recent data are available, saw a sharp decline in official development assistance for only biodiversity as marked by the Organization for Economic Cooperation and Development.

Multilateral financial and technical cooperation calls for a longer-term perspective on biodiversity governance

There is still no system-wide approach to addressing biodiversity issues at the United Nations system organizations, including the Bretton Woods institutions. The year 2008 saw the lowest level of World Bank investment to biodiversity from its own resources since 1990. Governments continue to invest sizably in conference and analytical services while multilateral biodiversity agreements have mostly advanced to the stage of implementation. The support role and capacity of global secretariats for biodiversity has received much less attention.

Large non-governmental organizations have a diverse pool of funding sources, and act as a barometer of global biodiversity funding

The severe global financial crisis in the past two years led to a considerable reduction of available financial resources to biodiversity at the national and international levels. Major international conservation organizations have been forced to cut their spending on biodiversity programmes. The most affected sources of funding are individual contributions, grants from foundations and corporate donations in the United States. The impact of governmental fiscal consolidations is expected in the coming years.

Sustainable use and use change of biodiversity and ecosystem services is a matter of financial integration

Sectoral development assistance with biodiversity orientation has been largely observed in water supply and sanitation, environmental protection, forestry, agriculture, fishing, energy and transport. This concentration of sectoral use and use change of biodiversity and ecosystem services provides a convenient focus of ecosystem-based intervention. Information exchange and policy dialogue are useful in ensuring that sectoral strategies, plans, polices and legislations are mutually supportive, but ultimate solution to conflicts of sectoral interests rests with financial flow and investment decisions. If finance is used as ecosystem integration media, or integrator, like under the climate change negotiations, new reformative perspectives must be developed that would channel financial flows and investment through biodiversity and ecosystem services to sectoral development, instead of attracting sectoral resources to biodiversity objectives.

Regional and subregional gaps in resource mobilization are a policy and programmatic blind spot

Regional and subregional initiatives, processes and mechanisms have not featured appropriately in the international biodiversity policy elaborations, but most are well established to facilitate cooperation on the regional and subregional benefits of biodiversity and ecosystem services. Resource mobilization at regional and subregional level is of particular significance to geographically smaller countries. Regional and subregional action programmes on biodiversity and finance, which are driven by regional and subregional organizations and their member states, can provide a supplementary tool in support of resource mobilization at the national level.

Tapping enormous values of biodiversity and ecosystem services is within reach

The benefits of conservation and sustainable use of biodiversity and ecosystem services far outstrip the cost of proactive action, but effective translation of the economic benefits and costs into financial terms requires innovative thinking and practical approaches. Payment for ecosystem services and biodiversity offsetting mechanisms are just two innovative financial mechanisms that may offer innovative solutions to addressing global biodiversity problems.

Increased attention to climate change financing can be an opportunity and challenge for biodiversity

Contrary to the popular perception that the increased financial commitment to climate change would have helped elevate donor interest in global environmental benefits, official development assistance marked for climate change has increased much faster than those addressing both climate change and biodiversity while the assistance marked for biodiversity declined. The squeeze-out effect is also observed at multilateral financial institutions. New approaches must be developed to successfully transform the climate challenge into a biodiversity funding opportunity.

The Convention's ability to mobilize financial resources is under watch while …

Parties and stakeholders will renew and strengthen their commitments around the 2011-2020 Strategic Plan of the Convention. The tenth meeting of the Conference of the Parties will be the first test on the viability of the strategy for resource mobilization adopted by Governments at COP-9, and thus provide an early indication on the extent to which the Convention's 2011-2020 Strategic Plan will be implemented and ultimately achieved.

Introduction

This report deals with the financial aspects of global biodiversity solutions. As more information and better knowledge on wildlife and ecosystem services as well as their losses have become available, global approaches to addressing biodiversity challenges have evolved from focusing on single species or single biomes often driven by altruistic animal welfare concerns to comprehensive ecosystem approaches which underpin utilitarian human well-being. Financial architecture has also evolved according. A series of international and regional environmental agreements and conventions have acted as catalysts in mobilizing actions and resources for global biodiversity agenda.

Global biodiversity agenda was initiated in the early 1970s while the United Nations Conference on the Human Environment was held in Stockholm in June 1972 and three grand old conventions for biodiversity were adopted, namely, Convention on Wetlands of International Importance Especially as Waterfowl Habitat; Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention); Convention on International Trade in Endangered Species of Wild Fauna and Flora. The Stockholm Conference envisaged the establishment of an environmental fund under the auspices of the United Nations, and recommendations 19-69 of the Stockholm Action Plan provided the first set of global actions to address elements of biological diversity, focusing on agricultural, forestry, fishery and water resources as well as genetic resources, wildlife management and parks.

Financial consideration did not feature prominently in the environmental conventions of the 1970s, including Convention on the Conservation of Migratory Species of Wild Animals. The World Heritage Convention was the first multilateral environment agreement that has considered that national heritage protection needs to address insufficient financial, economic, scientific, and technological resources available to the country where the heritage to be protected is situated. Fund for the Protection of the World Cultural and Natural Heritage of Outstanding Universal Value, called "the World Heritage Fund", was established in order to receive compulsory and voluntary contributions made by States Parties to this Convention, as well as gifts or bequests which may be made by public or private bodies or individuals, funds by collections and receipts from events organized for the benefit of the fund.

Nevertheless, the resultant Environment Fund of the United Nations Environment Programme and the World Heritage Fund had not been equipped with adequate resources to address enormous biodiversity challenges. In accordance with the world heritage convention, in no case shall the compulsory contribution of States Parties to the Convention exceed 1% of the contribution to the regular budget of the United Nations Educational, Scientific and Cultural Organization. The financial limit set therein has effectively minimized or even eliminated the potential impact of this financial innovation.

The decade 1980s registered several landmark events, including the World Conservation Strategy launched by IUCN, UNEP and WWF in 1980, the World Charter for Nature adopted by the United Nations General Assembly in 1982, and the Brundtland report published by the World Commission on Environment and Development in 1987, but financial innovation was largely in the stage of germination. The Charter recommended that "Funds, programmes and administrative structures necessary to achieve the objective of the conservation of nature shall be provided." The World Conservation Strategy called for long-term and systemic efforts, and highlighted the importance of the participation of all countries and all members of society. As a result, a large number of countries, both developed and developing, initiated national conservation strategies during the late 1980s.

The Brundtland report was among the first to advocate a financial arrangement in the form of a Trust Fund to which all nations could contribute, with those benefiting most from the use of these resources contributing an appropriate share. Governments of tropical forest nations could receive payments to

support the conservation of given areas of forest, with such payments rising or falling depending on the degree to which the forests are maintained and protected. The report indicated that the sums required for effective conservation are large. It further called for attention to special opportunities for linking species conservation with development aid. International development agencies –the World Bank and other major lending banks, UN agencies, and bilateral agencies – should give comprehensive and systematic attention to the problems and opportunities of species conservation.

The last decade of the 20th century marked a historic turn in the global biodiversity movement within the context of sustainable development. The United Nations Conference on Environment and Development (UNCED or the Earth Summit), held in June 1992 in Rio de Janeiro, Brazil, agreed to the Rio Declaration on Environment and Development, the action programme Agenda 21, and the statement of Principles for the Sustainable Management of Forests. Agenda 21 not only provided cost estimates but also outlined the source of funding in addition to a country's own public and private sectors, including the multilateral development banks and funds, such as the International Development Association, regional and subregional development banks, the Global Environment Facility; the relevant specialized agencies, other United Nations bodies and other international organizations; multilateral institutions for capacity-building and technical cooperation; bilateral assistance programmes; debt relief; private funding; investment; innovative financing.

The Conference officially launched the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change. The Global Environment Facility (GEF) was endorsed as the financial mechanism of these conventions. GEF shares many features with the Multilateral Fund under the Montreal Protocol on Substances that Deplete the Ozone Layer established in 1987: covering all agreed incremental costs of developing countries in implementing respective multilateral environmental agreements; provision of new and additional financial resources; an executive body responsible for decision making, under the authority of the Conference of the Parties; implementation through existing entities of the United Nations system; and replenishments on preset intervals. Nevertheless, the governance structure of the Multilateral Fund remains within the framework of the Montreal Protocol, whereas the GEF has a distinct governance structure that is supposed to be accountable to these conferences of the parties. The replenishments of the GEF Trust Fund are negotiated principally among donor countries, as an opportunity to fulfill their financial commitments under various multilateral environmental agreements.

At the beginning of the new century, Governments adopted the first Strategic Plan of the Convention on Biological Diversity in order to guide national implementation of the Convention. One strategic goal of the 2002 Strategic Plan sets out: "Parties have improved financial, human, scientific, technical, and technological capacity to implement the Convention." But the first Strategic Plan fell short of developing innovative financial responses, despite the opportunities available from the United Nations International Conference on Financing for Development, which adopted the Monterrey Consensus on 22 March 2002, as a new reference point for international development cooperation. Major donors, including the United States and the European Union, made new development aid commitments at the conference. Many other significant commitments were announced afterwards.

The Strategic Plan of 2002 has helped to mobilize actions at all levels, including some funding programmes by various donors. However, it has failed to deliver the stated target "to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on earth". One of the most cited reasons for explaining this failure is the lack of adequate financial resources. But the lack of quantitative indicators in respect to funding requirements has prevented meaningful analysis of exact causes of the financial failure.

Towards the end of the first decade, the ninth meeting of the Conference of the Parties adopted, in advance of developing the second Strategic Plan of the Convention for the period 2011-2020, the

Strategy for Resource Mobilization in support of the achievement of the Convention's three objectives, together with the Bonn Message on Finance and Biodiversity to the Follow-up International Conference on Financing for Development to Review the Implementation of the Monterrey Consensus. The Strategy seeks to substantially enhance international financial flows and domestic funding for biological diversity in order to achieve a substantial reduction of the current funding gaps by pursuing eight strategic goals:

- Improve information base on funding needs, gaps and priorities
- Strengthen national capacity for resource utilization and mobilize domestic financial resources for the Convention's three objectives
- Strengthen existing financial institutions and, promote replication and scaling-up of successful financial mechanisms and instruments
- Explore new and innovative financial mechanisms at all levels with a view to increasing funding to support the three objectives of the Convention
- Mainstream biological diversity and its associated ecosystem services in development cooperation plans and priorities including the linkage between Convention's work programmes and Millennium Development Goals
- Build capacity for resource mobilization and utilization and promote South-South cooperation as a complement to necessary North-South cooperation
- Enhancing implementation of access and benefit-sharing initiatives and mechanisms in support of resource mobilization
- Enhance the global engagement for resource mobilization in support of the achievement of the Convention's three objectives

The full implementation of the strategy for resource mobilization will provide an early indication of the extent to which the Convention's 2011-2020 Strategic Plan will be implemented and ultimately achieved.

Report structure

Based on the elements of the Convention's strategy for resource mobilization and the agenda before the tenth meeting of the Conference of the Parties, this report is divided into three sections. The first section considers information culled on national budgets, the financial mechanism, bilateral and multilateral resources, and non-governmental organizations. These sources of information, from national to global, were explicitly identified in the Convention's strategy for resource mobilization.

The second section surveys the sectoral and geographical pattern of resource mobilizations, and identifies sectoral and regional trends in mobilizing external and internal resources, as well as sectoral and regional approaches to resource mobilization.

The third section provides updates on innovative financial mechanisms, mainly on payment for ecosystem services and climate change financing. These promising fields of resource mobilization are expected to evolve rapidly in the next few years.

Finally, the report points to a few thematic areas of resource mobilization that require enhanced reflections in terms of further work on this subject.

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Chapter 1. National Resource Mobilization

National expenditure

When the Convention entered into force in 1993, almost no country had a separate national budgetary line for biodiversity. Now most countries have certain biodiversity elements in national budgetary allocations. In a sample of 93 national reports, only less than 10 percent of countries indicated that they did not provide any financial support or incentives to national activities that are intended to achieve the objectives of the Convention. The large majority of countries have provided financial support or incentives or both to support national biodiversity activities. This funding is largely a result of a central government funding package for its national biodiversity strategy and action plan.

Budgets for biodiversity and ecosystem services are generally classified under the heading of environmental protection, and cover activities relating to the protection of fauna and flora species (including the reintroduction of extinct species and the recovery of species menaced by extinction), the protection of habitats (including the management of natural parks and reserves) and the protection of landscapes for their aesthetic values (including the reshaping of damaged landscapes for the purpose of strengthening their aesthetic value and the rehabilitation of abandoned mines and quarry sites); administration, supervision, inspection, operation or support of activities relating to the protection of biodiversity and landscape; and grants, loans or subsidies to support activities relating to the protection of biodiversity and landscape. Table 1 depicts the status concerning and trends in environmental protection expenditure in developed countries.

Table 1 Percentage of environmental protection in national governmental expenditure

Country	General Government (year)		Central Government (year)
Australia	1.36 (2002)	1.43 (2008)	0.43 (2008)
Austria	0.66 (2002)	0.95p (2007)	0.35p (2007)
Belgium	1.54 (2001)		0.05 (2001)
Canada	1.56 (2003)	1.65 (2006)	0.65 (2006)
Denmark	0.96p (2004)	0.97p (2008)	0.69p (2008)
Finland	0.67p (2001)		
France	1.52 (2005)	1.64p (2008)	
Germany	1.23 (2002)	1.1 (2008)	0.06 (2006)
Iceland	1.57 (2006)	1.15(2008)	0.78 (2008)
Israel	1.55 (2002)	1.49 (2008)	0.42 (2008)
Italy	1.67 (2000)	1.72 (2003)	0.39 (2003)
Japan	3.76 (2003)	3.56 (2006)	
Luxemburg	2.79 (2002)	2.81 (2008)	1.21 (2008)
Malta	1.27 (2001)		1.27 (2001)
Netherlands	1.57 (2002)	1.84p (2008)	0.46p (2008)
New Zealand	1.73 (2004)	1.18p (2007)	0.06p (2005)
Norway	1.67 (2003)	1.45p (2008)	0.36p (2008)
Portugal	1.53 (2000)		0.33 (2002)
San Marino	3.23 (2002)		3.23 (2002)
Spain	1.85 (2000)		0.19 (2000)
Sweden	0.59 (2002)	0.68 (2008)	0.46 (2008)
Switzerland	1.74 (2002)	1.66 (2007)	0.06 (2007)
United Kingdom	1.32 (2003)	2.15 (2005)	

Source: International Monetary Fund (2003, 2004, 2005, 2006, 2007, and 2009)

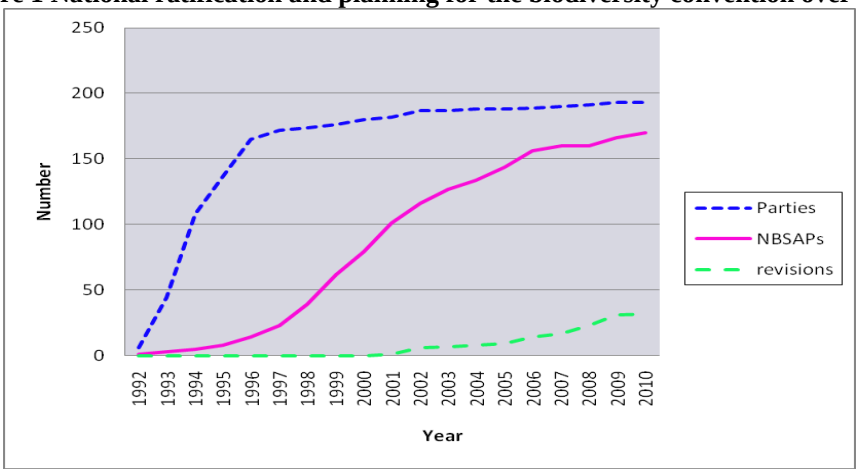
In general, environmental protection expenses are insignificant or very marginal elements in the national budgeting process, in both developed and developing countries. No major biodiversity countries have ever allocated more than one percent of their central government expenditure to environmental protection. Government finance information on biodiversity is even more incompletely available at the global level. There is also a mixed picture about the percentage of environmental protection in national governmental expenditure over the time. Although a number of countries, both developed and developing, increased the percentage of environmental protection in national governmental expenditure in the past decade, there were also an equal number of countries, both developed and developing, where the percentage of environmental protection decreased.

There is a general trend of decentralization in environmental spending with central governments allocating less percentage of overall expenditure to environmental protection than general governments that include local government expenditure. This may be explained by the inclusion of waste management, waste water management, and pollution abatement, which in most countries are taken care of by local government. The extent to which local governments address biodiversity objectives remains a subject for further examination.

In terms of central government expenditure, developed countries and countries with economies in transition have on average higher percentage for environmental protection than developing countries, signifying that developing countries in general have lower fiscal capacity and also perhaps lower awareness and less political space in dealing with environmental problems. This concentration of budgetary resources in developed countries and countries with economies in transition is in stark contrast with the distributional pattern of biodiversity globally.

The time lag between political commitment and strategy development can be significant, not accounting for the delay between preparing action strategies and actual implementation. Figure 1 describes the progress in making political commitments and preparing national biodiversity strategies and action plans over the past two decades. While by 1993 over fifty countries ratified the Convention, it was only until 1998 that there were fifty countries with national biodiversity strategies and action plans. The number of Parties well passed 150 in 1995, but it was until 2005, ten years later, that the number of national biodiversity strategies and action plans reached the mark of 150. The slow progression from global commitment on biodiversity to concrete action requires doubled efforts to maintain financial momentum that may arise out of global events.

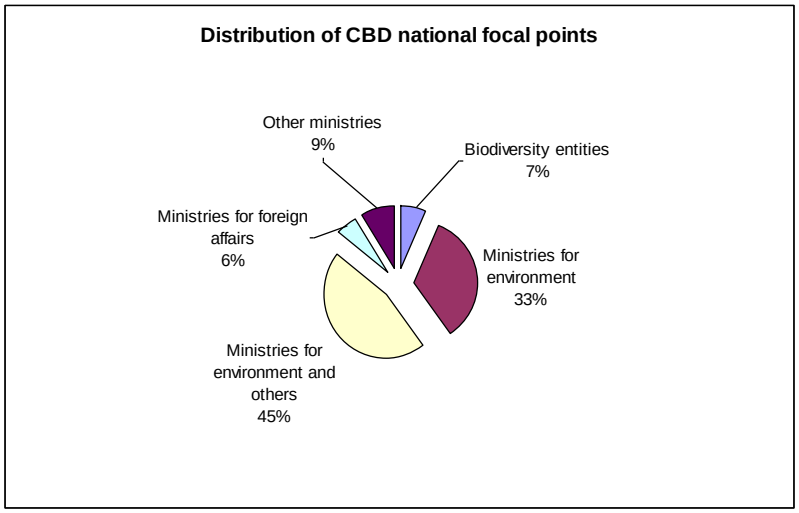
Figure 1 National ratification and planning for the biodiversity convention over time



Source: CBD database

The fact that biodiversity and ecosystem services tend to fall within the exclusive jurisdiction of environmental ministries points to the need for additional efforts to mobilize sectoral budgets for biodiversity objectives. As shown in figure 2, the majority of national focal points are hosted by ministries for environment, and less than one tenth of the Convention's national focal points are housed in other ministries. The disparity among sectoral interests is widely observed: biodiversity strategies and plans try to extend into sectoral plans, programmes and policies, but sectoral and broad national policy frameworks do not demonstrate equal interest in biodiversity objectives.

Figure 2 Percentage of governmental ministries housing CBD national focal points



Source: CBD database

Different national budgeting approaches demands different ways of securing budgetary allocations for biodiversity objectives. Under line item budgeting, one time inclusion of biodiversity in national budget will automatically lead to future financing, while under zero-based budgeting, the momentum of justifying biodiversity funding must be sustained over time. Under program, performance and results-based budgeting, biodiversity needs must be integrated in national budgetary objectives. Medium-term expenditure framework (MTEF) also requires biodiversity to be part of national priority system. National budgetary cut can have disproportionate impact on biodiversity funding.

National revenues

Tax revenues directly from exploiting biodiversity resources are generally not significant. Some countries have natural resources tax on use of natural resources such as water, air, packaging material and other biological resources exploitations, or provincial taxes on sensitive natural spaces. Finland developed taxation system so that the emphasis in taxation could gradually be shifted from taxation of labour to taxation of the use of natural resources and of activities polluting the environment.

Charges on biodiversity use, which involve less legislative procedures, are more common than tax measures. Many countries charge fees for issuing authorisation documents such as licenses or permits of nature utilization, for instance, forestry concession/ grazing permits in forest reserves/ licenses for commercial use of forest resources; fishing permits/ angling license/ registration for boats/ fishing concession; CITES export permits; trophy hunting fees; national park entry fees; environmental impact assessment certification; wetland and water permits; and permit for emissions, drainage, discharge of polluting substances and waste according to scientifically justified standards. In some countries, these revenues are fed into national coffer and returned to biodiversity as annual budget allocation. Certain countries return a percentage of these revenues for direct use to nature management. Other countries treat the revenues as revenues of State national fund, and thus they are not used for purposes of biological diversity.

International knowledge on biodiversity-related tax and charge issues has not been well developed, such as optimal level of charges, legislation, enforcement capacity, information base, administration of resultant revenues, and how to redirect revenues towards biodiversity conservation. In Zimbabwe, for example, the annual permit cost for a luxury cruise boat was Z$50,000, yet one boat could generate at lest Z$500,000 per annum. With canoeing in Victoria Falls, the annual permit cost to an operator was Z$25,000 while the industry generated about Z$50 to Z$60 million per annum. A question is whether these tax or charge measures effectively achieve their stated objectives. In some cases, the license and permit costs can not cover government costs of relevant monitoring and enforcement,

Certain countries also collect revenues from other sectors for purposes of biodiversity. Trinidad and Tobago's green fund receives 0.1% tax on revenues of private enterprises. In Egypt, an additional tax is levied on aeroplane tickets issued locally, from which the income is used to finance programmes for developing tourism and environmental protection. In Mauritius, coastal hotels and boarding houses (with more than 4 bedrooms) are required to pay an environment protection fee of 0.75% of their annual turnover.

Tax exemption measures in national taxation systems can facilitate resource flows to biodiversity objectives, and these are increasingly introduced in many countries. Income tax deductions can be found for biodiversity products, land use changes and donations. Similarly, there are land tax exemptions for nature reserves and protection commitment, value added tax (VAT) exemptions for biodiversity equipment, products and special funds, custom duty exemptions for biodiversity-related imports and technology, tax exemptions on international cooperation procurement, tax exemptions for charitable organizations and foundations, and other tax exemptions that can be beneficial to biodiversity objectives.

Payment for the damage done to environment as a result of non-observance of rates and rules of nature utilization is a rather popular instrument used to collect resources for environmental purposes. In Brazil, the Law of Environmental Crimes stipulates rules on penal and administrative sanctions that may be applied to conducts and activities that are harmful to the environment. In China, administrative charges include charges for disposing pollutants, dumpage charge in sea area, charge for using sea area etc. Other examples include fines for illegal hunting. But fines and sanctions are not always effective, and do not necessarily promote fulfilment of biological diversity objectives. In some countries, the penalties established are too low to provide a real deterrent and do not reflect the actual economic realities and real costs of damage. In most cases, assessments of the overall fines for use of biological resources or products is based on existing market prices, but does not take into account the costs associated with long-term and indirect environmental damage resulting from such activities.

Further non-tax revenues may come from direct operations sponsored by Governments, particularly those economic activities within the protected areas themselves, such as cutting woods, grazing, collection of mushrooms and medicinal plants, ecotourism, hotels, elephant rides, issuing filming licenses, and monkey export. In St. Lucia, local organizations have generated revenues from yachting, diving, snorkeling, forest produce, Christmas trees, and forest trails. In Zimbabwe, the Forestry Commission had a commercial wing operating as a company, and National Parks and Wildlife Authority charged for services given with a fund set-up.

Revenues generated from sustainable use of biological resources could be greatly enhanced. In Armenia, pricing policy was generally driven by the need to raise revenue rather than by market forces. For example, timber prices were determined by the costs of extraction and the need to generate specific revenues, and as a result timber products were undervalued and sold well below international prices. The introduction of modern technologies, along with revised pricing and effective marketing of timber, could increase income from forestry by 650%.

Government debt operations

Biodiversity can be part of government solution to their external debt service problems. In the last years of the past century, considerable amount of debt relief was made possible through debt-for-nature swaps, and as a result, over US$1 billion in environmental funding was generated in nearly 30 developing countries, in particular in the form of trust funds. Major donors, including the United States, Germany and France, continue to tap biodiversity as a sustainability solution to debt problems. Germany alone had nearly 1.7 billion Euros outstanding debts in 2007 that could be converted for biodiversity purposes.

On 12 August 2010, US Government announced a debt-for-nature agreement to reduce Brazil's debt payment to the United States by close to $21 million over the next five years. In return, Brazil commits these funds to support grants to protect its tropical forests. Similar earlier agreements have brought more than $239 million to protect tropical forests under the US Tropical Forest Conservation Act (TFCA) of 1998. An earlier program, Enterprise for the Americas Initiative (EAI), established in 1991, generated some US$172 million for environmental conservation and child survival projects.

France established the Debt Cancellation and Development Contract (C2D) as a supplement to the Debt Relief Initiative for Highly-Indebted Poor Countries (HIPC). The total sum of debt cancellations under the initiative was estimated at 12.7 billion Euros. In 2006, Cameroon and France signed the C2D debt-for-nature swap agreement, allocating $25 million over five years to protect part of the world's second largest tropical forest. In 2008, Madagascar and France agreed to the largest debt-for-nature swap in Madagascar's history that provide $20 million to directly fund the Madagascar Foundation for Protected Areas and Biodiversity, established in 2005, for long-term support of the country's protected areas. This debt swap helped to exceed the Foundation's endowment goal of $50 million.

National environmental funds

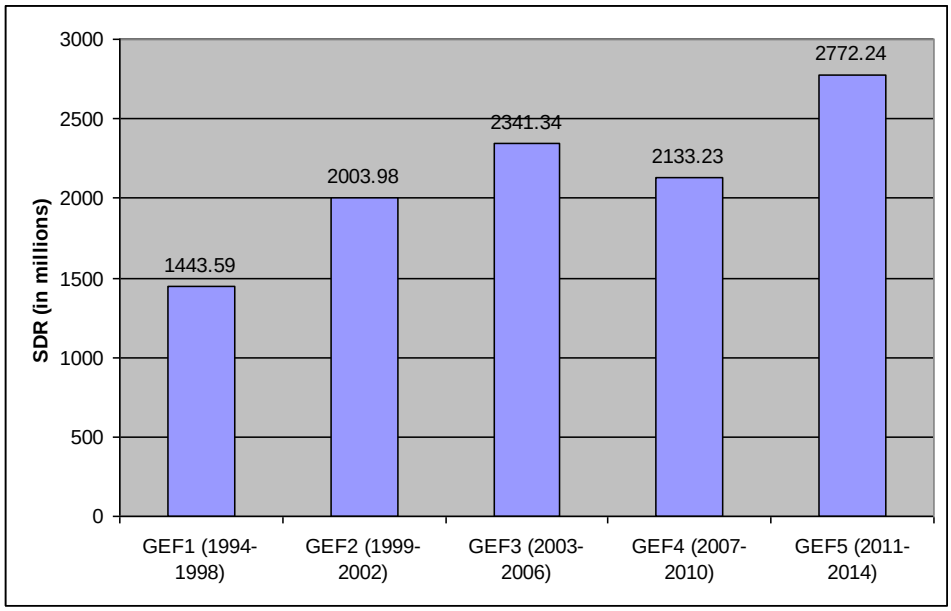
Most countries have one or more environmental funds, in particular in Latin America and the Caribbean, and many environmental funds have been supported by external resources, such as those from debt-for-nature swaps. A review of 50 conservation trust funds has observed that some US $810 million have been raised for biodiversity conservation worldwide, including 74% in Latin America, 10% in Asia, 9% in Africa, and 7% in Europe. The contribution from United States, Global Environment Facility and Germany accounts for 70%, and resources from national governments and other donors cover the remaining 30%. For Latin America and the Caribbean, conservation funds and debt-for-nature swaps are considered as a mid-term and in some cases a long term financial basis to address, in some measure, the funding gaps in the management of protected areas and biodiversity conservation. Trust funds with broad environmental objectives are much larger, but provide smaller proportion of their funding to biodiversity objectives.

Chapter 2. The Financial Mechanism

The Global Environment Facility (GEF) was established in October 1991 as a pilot program to assist in the protection of the global environment and to promote environmentally sound and sustainable economic development, in anticipation of the adoption of international conventions on biological diversity and climate change. GEF was part of the interim financial arrangement under Article 39 of the Convention, and accepted by decision III/8 in 1996 as the institutional structure to operate the financial mechanism of the Convention. The GEF remains to be the only multilateral institution that has direct accountability to the Conference of the Parties.

The GEF pilot phase was provided with a $1 billion, and since then, the GEF Trust Fund has been replenished five times. The level of replenishment saw substantial increase in the 1990s as well as in the most recent negotiation (Figure 3). According to the fourth overall performance study of the GEF (OPS4) concluded in early 2010, the replenishments of the GEF have leveled off, while the purchasing power of GEF funds has been reduced by 17 percent since 1994, two focal areas have been added, more than 100 requests and directives have been received from the conventions, the GEF has become operational in many more countries since its inception, the problems in the approval process for new projects in the years up to 2007 have been caused by the lack of sufficient funds, and solid project ideas had to wait up to six years to get funded. With the fifth replenishment, however, GEF allocations to biodiversity for a four-year period will exceed the mark of US$ 1 billion for the first time.

Figure 3 Replenishments of the GEF Trust Fund over time



Source: GEF (1994, 1998, 2002, 2006, 2010)

The twenty-two traditional donors have participated in nearly all the replenishments of the GEF Trust Fund. The replenishments have also attracted the participation of 18 recipient donors, and most of them participated in the latest replenishment. The latter is not only symbolically significant, but also demonstrates that developing countries and countries with economies in transition are willing to participate in financing the provision of global public goods such as biodiversity and ecosystem management. Table 2 provides the full list of countries that have participated in the GEF replenishments.

Table 2 GEF donors

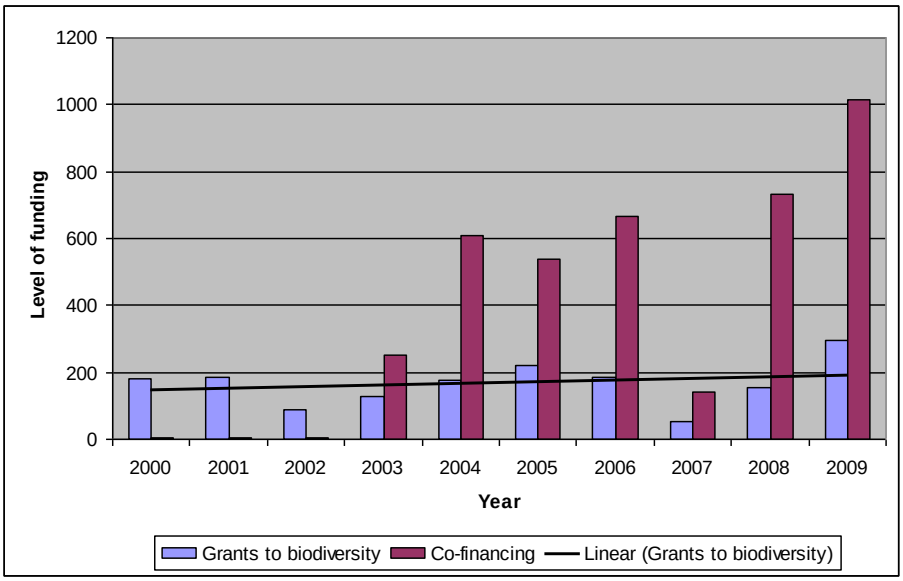
GEF-1	GEF-2	GEF-3	GEF-4	GEF-5

Australia, Austria, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States, China, India, Mexico, Pakistan, Turkey			
	Belgium, Greece, Luxemburg, Czech Republic, Republic of Korea, Slovenia		
	Argentina		
Brazil			Brazil
	Cote d'Ivoire		
Egypt			
	Nigeria		Nigeria
	Russian Federation		Russian Federation
		South Africa	

Source: GEF (1994, 1998, 2002, 2006, 2010)

Between 1991 and 2000, the GEF provided about US$1.1 billion in grants and leveraged an additional US$2.5 billion in co-financing for biodiversity-related projects. By the end of the year 2009, GEF has provided total grants of US$2.88 billion in the focal area of biodiversity, with co-financing of US$7.85 billion. The approved annual GEF grants to biodiversity have averaged within the range between US$100 million and US$200 million (Figure 4), and the overall trend is not noticeably upward. Nevertheless, Cofinancing for biodiversity projects has grown steadily, with an upward projection.

Figure 4 Grants and co-financing of GEF biodiversity focal area (millions US$)



Source: GEF Work Program, GEF/C.36/7, October 8, 2009 and related documents

A further resourcing potential of the GEF is through administering additional trust funds. The GEF administers two trust funds: Least Developed Countries Trust Fund (LDCF) and Special Climate Change Trust Fund (SCCF), and provides secretariat services, on an interim basis, for the Adaptation Fund.

The SCCF fund is a voluntary trust fund that finances activities, programs, and measures relating to climate change that are complementary to those funded by the resources allocated to the climate change focal area of the GEF and to those provided by bilateral and multilateral funding. The Trust fund has 13 donors (Canada, Denmark, Finland, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom) that have made pledges to the SCCF. The GEF already received voluntary contributions of about $120 million for the SCCF.

The LDCF fund addresses the special needs of the 48 Least Developed Countries (LDCs) that are especially vulnerable to the adverse impacts of climate change. The fund has 19 donors: Australia, Austria, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom. The GEF already mobilized voluntary contributions of about $180 million for the LDCF.

The Adaptation Trust Fund finances concrete adaptation projects and programs in developing countries that are Parties to the Kyoto Protocol. It is funded through monetization of certified emission reductions (CERs) and other sources of funding.

There is no similar trust fund established under the Convention on Biological Diversity. But a few new ideas of additional funding programmes have emerged in the past two years, including a fund for access to genetic resources and benefit sharing, a fund for supporting the 2020 target, and a fund oriented specifically towards biodiversity for development. But these ideas have not been advanced to the stage of conceptual development. Under the draft Strategic Action Plan for the Cartagena Protocol on Biosafety (2011-2020), a Special Biosafety Fund, financed through voluntary contributions and administered by the Global Environment Facility, is being proposed to support national activities for the implementation of the strategic plan.

Chapter 3. Multilateral Financial and Technical Cooperation

Multilateral financial and technical cooperation involves the United Nations system organizations including the Bretton Woods institutions, which were envisaged, by Agenda 21, to be part of multiple funding sources to support biodiversity and other global environmental issues. Multilateral environmental agreements have increasingly become a source of support to biodiversity policies, strategies, programmes and projects. But their role and capacity has not been expressly embedded in multilateral financial and technical cooperation system.

Multilateral environmental agreements

Secretariats for multilateral environmental agreements are hosted by a range of multilateral intergovernmental organizations, including the United Nations Secretariat, United Nations Environment Programme (UNEP), United Nations Educational, Scientific and Cultural Organizations (UNESCO), Food and Agriculture Organization of the United Nations (FAO), and IUCN. The global funding picture of these secretariats has not been often assembled. Table 3 provides a partial account of major multilateral environmental agreements. Annual budget of secretariats of these multilateral environmental agreements in 2005 was around US$150 million, two thirds of such resources as core budget from government contribution. The earlier conventions and regional conventions have demonstrated more dynamics for attracting larger share of their funding from other financial sources, for instance, foundations, nongovernmental organizations and the private sector. The World Heritage Convention relies on government contribution for slightly over one third of its funding. This remarkable success may be largely attributed to the existence of the world heritage funds under the Convention.

Table 3 Financing secretariats of multilateral environmental agreements

Treaty	Period	Core (million US$; %)	Supplementary (million US$)	Government contribution	Foundation/ NGO/ private sector
Ramsar (1971)	Annual	3.2 (50%)	3	75%	25%
World Heritage Convention (1972)	2004-5	9.83 (31%)	21.87	35%	65%
CITES (1973)	Annual	4.8 (76%)	1.5	95%	5%
Barcelona Convention (1976)	2006	7.90 (89.67%)	0.82	89.67%	10.33%
CMS (1979)	2006-8	7.54	3.55		
Cartagena Convention (1983)	2006	2.81 (98.9%)	1.27	46%	49.3%
Vienna Convention (1985)	2005	5.5 (100%)		100%	
Basel Convention (1989)	2005-6	7.09 (76%)	2.19	99%	1%
Rotterdam Convention (1998)	2006	3.71 (78.4%)	1.02	100%	
CBD (1992)	2005-6	25.46 (76%)	8.23	99.7%	0.3%
UNCCD (1992)	Biennium	16.71 (100%)		100%	
UNFCCC (1992)	2006-7	53.5 (55%)	43.2	95%	5%
Stockholm Convention (2001)	2006-7	10.35 (75%)	3.44	100%	

Source: United Nations document

Most secretariat budgets of multilateral environmental agreements have been spent on conference services and normative and analytical activities. When a multilateral environmental agreement is relatively new, its entire secretariat budgets tend be used to provide conference and normative activities. Among the three Rio conventions, only UNCCD has spent over a quarter of its budgets on regional and national implementation activities (Table 4). But the earlier conventions spend much less share of their budgets on conference and analytical services and more budgets on regional and national implementation activities. The spending pattern may also explain why the earlier conventions are able to tap non-governmental sources for more proportion of their funding.

Table 4 Expenditure structure of secretariats of multilateral environmental agreements

Treaty	Period	Conference service	Normative/ analytical	Regional activities	National activities
Ramsar	Annual	10%	60%	40%	10%
World Heritage Convention	2004-5	2.5%	1.5%	25%	71%
CITES	Annual	40%	35%	15%	10%
Cartagena Convention	2006	14.5%	1%	20%	
Barcelona Convention	2005	8%		87%	5%
Vienna Convention	2005	53%	47%		
Basel Convention	2005-6	40%	15%	30%	15%
Rotterdam Convention	2006	33%			
CBD	2005-2006	32%	68%		
UNCCD	Biennium	6.6%	60%	13%	14%
UNFCCC	2007-7	8%	74%		
Stockholm Convention	2006-7	48%			

Source: United Nations document

United Nations Development Programme

According to its Strategic Plan for 2008-2011, UNDP strategic priority on environment and sustainable development seeks to deliver four key results: environmental mainstreaming, environmental finance/markets, climate change adaptation and mitigation, and local level response capacity. Its biodiversity work is organized around two areas: unleashing the economic potential of protected areas, and mainstreaming biodiversity management objectives into economic sector activities.

UNDP's portfolio of biodiversity projects consists of 177 initiatives under implementation, at the amount of US$ 1.879 billion. The Global Environment Facility (GEF) is the largest financier of these projects, contributing US$ 533 million in funds administered by UNDP. Other financiers of projects include the German funded International Climate Initiative, bilateral agencies, governments and the private sector. In addition, the GEF Small Grants Programme (SGP), implemented by UNDP, has established operations in over 120 countries, with US$ 157 million in GEF funds and US$ 224 million in third party co-financing. A number of other UNDP environment programmes also

contribute towards biodiversity management, including the Poverty–Environment Initiative, the UN–REDD Programme, UNDP's GEF supported International Waters Programme and initiatives of the Nairobi based Drylands Development Centre.

World Bank Group

The World Bank Group is in the process of formulating a new 2010 environment strategy. Its investment in biodiversity has drawn resources from the International Bank for Reconstruction and Development (IBRD), International Development Association (IDA), Global Environment Facility, International Finance Corporation (IFC), as well as the Development Grant Facility (DGF) and the Bank-Netherlands Partnership Program (BNPP), Development Marketplace (DM), BioCarbon Fund (BioCF), and Forest Carbon Partnership Facility (FCPF).

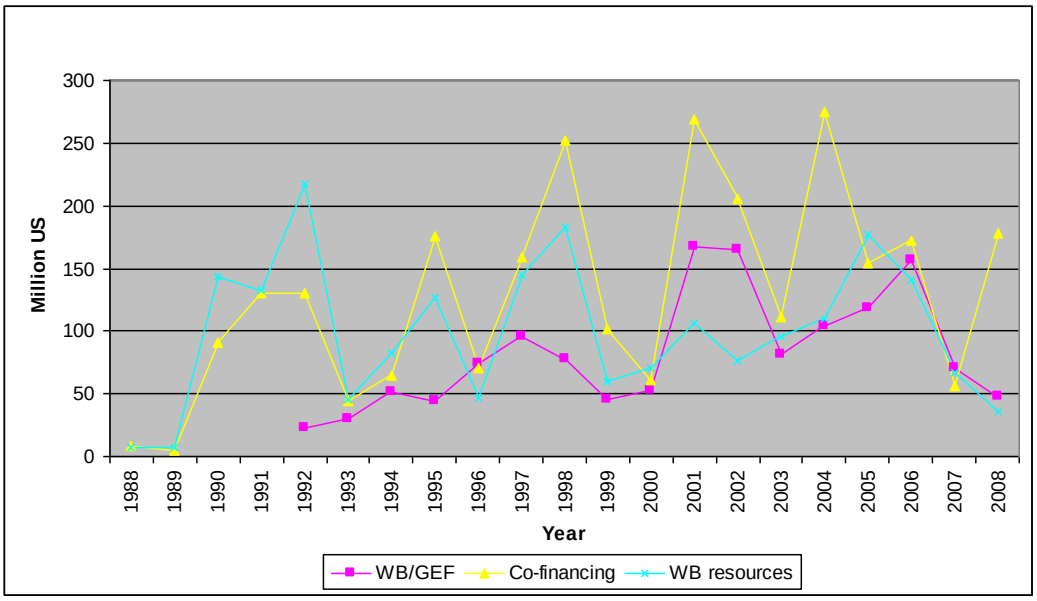
Figure 5 depicts annual biodiversity investments by funding source: World Bank/GEF, World Bank own resources (IBRD, IDA, Trust Funds and Carbon Finance), and Cofinancing. On the five year average, World Bank total annual investment in biodiversity has increased from US$245 million for 1992-1997 to US$ 333 million for 1998-2002 and US$ 373 million for 2003-2008. This upward trend has been largely supported by co-financing, which accounts for around 45 per cent of total annual biodiversity investments. World Bank/GEF funding has fluctuated from an amount of $23 million in the early 1990s to a high of US$166 million in the early 2000s. The year 2008 saw the lowest level of World Bank/GEF annual biodiversity investment for the past decade. On the basis of five year average, World Bank/GEF annual biodiversity investment stayed around US$100 million

IDA commitments to biodiversity have decreased over the past two decade. The five-year averages show that IDA annual commitments to biodiversity decreased from US$50 million for 1992-1997 to US$40 million for 1998-2002 and US$38.7 million for 2003-2008. In 2008, IDA had the lowest level of investment in biodiversity in its history of record (since 1988).

IBRD, the leading arm of the World Bank Group, has been increasingly used for biodiversity projects. On a five-year basis, IBRD annual investments to biodiversity averaged from US$47 million for 1992-1997 to US$33 million for 1998-2002 and US$55 million for 2003-2008.

Overall, World Bank annual investment to biodiversity from its own resources averaged from US$104 million for 1992-1997 to US$82 million for 1998-2002 and US$106 million for 2003-2008. The funding level and pattern roughly corresponds to that of World Bank/GEF investment, and in some years, has offsetting the fluctuations demonstrated in the World Bank/GEF investment. The year 2008 saw the lowest level of World Bank investment to biodiversity from its own resources since 1990.

Figure 5 Annual biodiversity investments through the World Bank Group (million US$)



Source: World Bank (2008, 2009a and 2010)

Multilateral processes for mobilizing resources

As a global reflection of national sectoral governance, United Nations provides a collection of biodiversity-related sector-based organizations. These organizations may be broadly clustered by functions based on the functional classification of governmental spending used by the International Monetary Fund. Each cluster of organizations can make their unique contribution to biodiversity objectives, in accordance with their respective institutional mandates. For instance, the International Monetary Fund and the World Bank are positioned to provide policy advice and support in prioritizing biodiversity objectives into national budgetary process and undertaking environmental fiscal reforms. Taken together, these organizations can help address financial and fiscal affairs, technical assistance, trade, labour affairs, agriculture, fishery, forestry, industries, transport, communication, environmental protection, health and education. The progress or lack of progress in sectoral integration with biodiversity objectives may be demonstrated in the work of these global sectoral organizations.

There has been, however, no system-wide United Nations strategy or initiative for biodiversity. Relevant coordination mechanisms include the United Nations Development Group (UNDG) and the Environment Management Group (EMG). UNDG focuses on UN system organizations that have operational activities at country level, while EMG is open to all UN system organizations that may have environmental impacts or contribute to environmental causes. A large number of United Nations system organizations are members of both UNDG and EMG. Most recently, EMG works with UNEP/World Conservation Monitoring Center to advance a common agenda on biodiversity for the United Nations system organization. But generally speaking, biodiversity challenges have not featured prominently in the High-level Committee on Programme, Development Cooperation Forum of the Economic and Social Council (ECOSOC), or annual meeting of Boards of Governors of International Monetary Fund and World Bank Group.

The GEF is generally open to an increasing number of multilateral financial and technical cooperation organizations given the wide range of instruments, tools and expertise. This development has helped foster a biodiversity agenda at these multilateral institutions. On the other hand, biodiversity funding from multilateral institutions, in particular UNDP and the World Bank Group, has developed a pattern of increasing link between their own resources and grants from the Global Environment Facility, largely due to the need to secure certain level of co-financing in order to compete for GEF projects.

The chance has increased that turbulences at the GEF may lead to a systemic shock on multilateral assistance to biodiversity.

Chapter 4. Bilateral Development Assistance

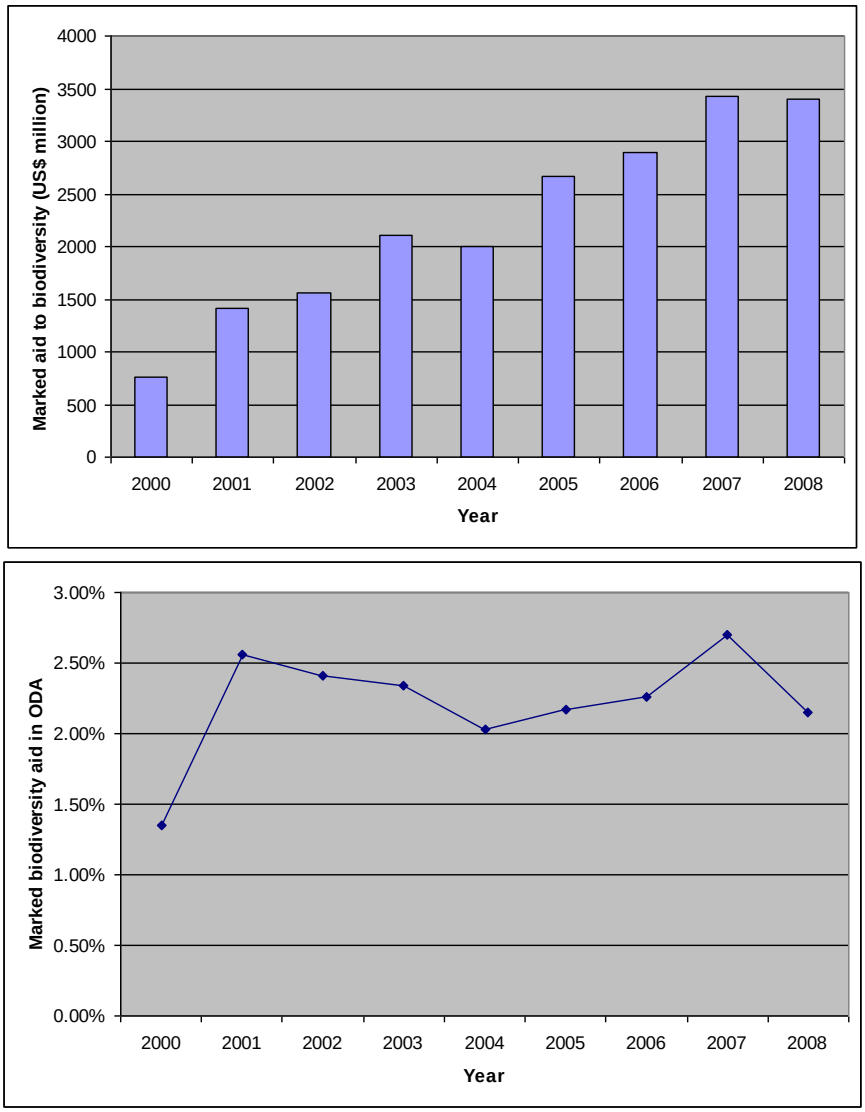
Over two thirds of official development assistance has been channelled through bilateral donor institutions and development agencies. Bilateral development assistance constitutes the bulk of international flows of grants to biodiversity in developing countries. Bilateral development assistance system is fairly well organized, though biodiversity and ecosystem services remain a marginal issue in bilateral development cooperation.

The story of number

The statistics on aid targeting the objectives of the Rio Conventions has been able to capture approximately 60% of total bilateral development assistance of all members of the Development Assistance Committee of the Organization for Economic Cooperation and Development. Given apparent inconsistencies and incompleteness identified in reporting, the statistical data from the biodiversity marker are more useful in helping detect the overall trends in bilateral assistance to biodiversity than in deriving any messages comparing funding performances of individual donor countries. Peer review reports of OECD Development Assistance Committee are of more relevance in considering funding performances of individual donor countries. In addition, although the constant price information is available in the Rio Marker system, information on other funding sources is only available in current price. Analysis based on current price information, as in the case of the present report, in general provides a rosier picture of the current efforts in comparison with the past. Furthermore, bilateral aid is increasingly marked under several different purposes, and this can be a significant barrier for cross-sectoral analysis. Sectoral projects marked for biodiversity are more indicative of the evolving sectoral importance to biodiversity, than being a sign of actual changes in their original sectoral characters.

Figure 6 demonstrates that the total development assistance marked for biological diversity, including those marked for biodiversity and climate change, biodiversity and land degradation, as well as biodiversity, climate change and land degradation, was US$3,395 million in 2008, provided by 21 developed countries, the EU Institutions and the International Development Association, and which was slightly lower (by 1%) than US$3,428 million marked in 2007. Nevertheless, the official bilateral assistance marked for biodiversity has improved considerably from 2007 in several developed countries. Overall, the marked biodiversity assistance has been increased steadily over the past decade, a triple jump from less than US$1 billion to over US$3 billion. This increase may be partially explained by better and wider reporting in the recent years. On the two-year average basis (2005-2006 versus 2007-2008), twelve Governments reported significant percentage increase in their bilateral assistance to biodiversity.

Figure 6 Trends in marked official development assistance to biodiversity (millions US$)



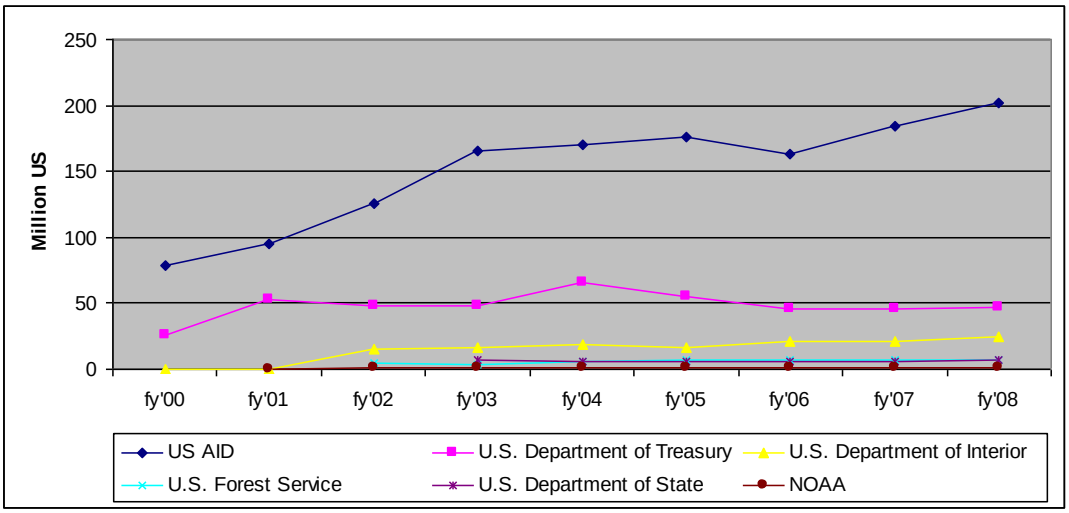
Source: based on OECD Rio Marker database

A nominal increase/decrease in marked assistance to biodiversity may simply be derived from overall growth/recession of official development assistance, and also can be a reflection of increased efforts. The latter is generally measured by changes in the percentage of marked biodiversity assistance to official development assistance. As percentage of official development assistance, marked biodiversity aid peaked in 2001 and 2007. The share of biodiversity in bilateral official development assistance experienced a four year decrease from 2.56% in 2001 to 2.03% in 2004, and then moved up to 2.7% in 2007. The year 2008 saw a sharp decrease in the percentage of marked biodiversity aid in official development assistance, i.e. from 2.7% in 2007 to 2.15% in 2008.

Official development assistance to biodiversity from the United States appears to have been under-reported within the Rio marker system. The Rio marker only partially captured biodiversity assistance data from Agency for International Development, Department of Interior, and State Department, but did not have any record from U.S. Department of Treasury, U.S. Forest Service, and U.S. National Oceanic and Atmospheric Administration (NOAA), including the major biodiversity initiatives such as Tropical Forest Conservation Act (U.S. Department of Treasury), International and Species Programs (U.S. Department of Interior), Office of International Programs (U.S. Forest Service), International Conservation Programs (U.S. Department of State), and Coral Reef Conservation (NOAA). For the period 2000-2008, USAID accounted for 67% of biodiversity

assistance from US Government, GEF for 15 percent, Tropical Forest Conservation Act for 7 percent, international and species program for 7 percent, US Forest Service for 2.1 percent, US Department of State for 1.9 percent, and NOAA for 0.4 percent. As shown in figure 7, there has been an upward trend in US assistance to biodiversity, which has been supported by USAID and US Department of Interior.

Figure 7 Biodiversity assistance from US Government (millions US$)



Source: USAID (2009)

Bilateral assistance landscaping

Bilateral assistance agencies are principal delivery mechanisms for providing resources through bilateral channels, and many other governmental organizations including Ministries of Environment are also involved in providing significant amount of aids to international biodiversity activities. Table 5 provides information on relative importance to biodiversity of donor institutions and development agencies in their countries.

Table 5 Bilateral channels of biodiversity assistance

Country	Agency (percentage in marked national biodiversity assistance)
Australia	Australian Agency for International Development (AusAID) (100%)
Austria	Austrian Development Agency (ADA) (66.57%) Federal Ministry of Foreign Affairs (BMA) (30.7%) Provincial governments, local communities (Reg) (1.94%) Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) (0.5%) Various ministries (MIN) (0.17%) Federal Ministry/ Federal Chancellery of Austria (BM/BWK) (0.11%)
Belgium	Directorate General for Cooperation and Development (DGCD) (96%) Official Federal Service of Foreign Affaires (SPAE) (1.64%) Walloon Official Regional Ministries (MPRW) (1.24%) Other Official Federal Services (ASPF) (0.95%) Official Federal Service of Finance (SPFF) (0.14%) Flanders Official Regional Ministries (MPRF)
Canada	Canadian International Development Agency (CIDA) (97%) International Development Research Centre (IDRC) (3%)
Denmark	Danish International Development Agency (DANIDA) (67%) Ministry of Foreign Affairs (MFA) (33%)
Finland	Ministry of Foreign Affairs (MFA) (99.98%)

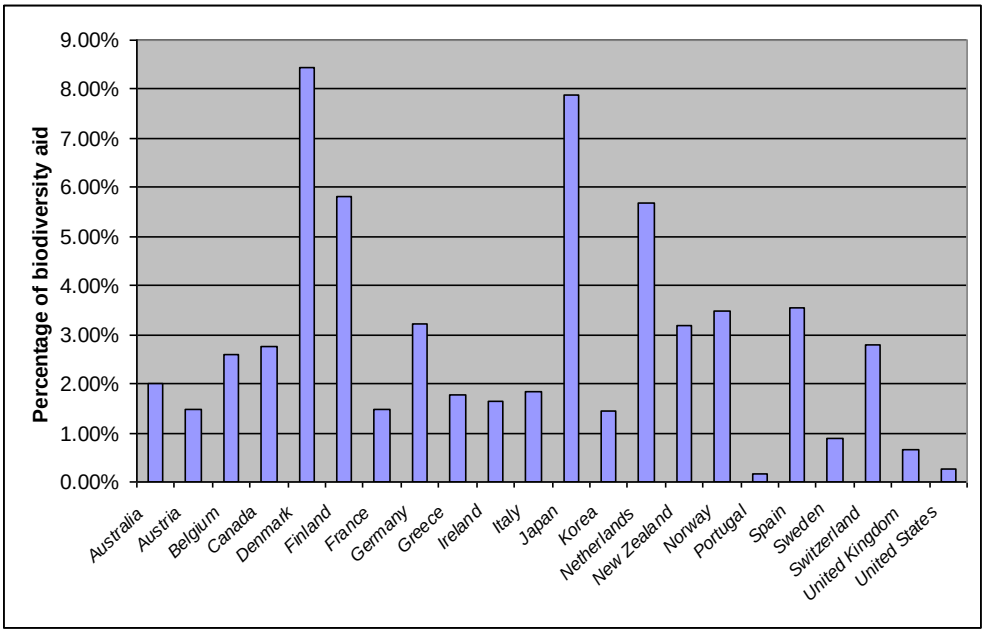
France	French Development Agency (AFD) (47.82%) Ministry of Economy, Finance and Industry (MINEFI/NATEXIS) (43.52%) Ministry of Foreign Affairs, others (MAE/FSP) (3.93%) Ministry of Foreign Affairs (MAE) (2.95%) Ministry of Economy, Finance and Industry (MINEFI)
Germany	Kreditanstalt für Wiederaufbau (KFW) (50.64%) Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) (31%) Bundesministerium für Wirtschaftliche Zusammenarbeit und Entwicklung (BMZ) (10.25%) Federal Ministries (Fed.Min.) (7.89%) Federal States & Local Governments (L.G.) (0.08%) Germany Investment and Development Company (DEG) (0.07%) Foundations/Societies/Misc. (non federal) (Found.) (0.01%)
Greece	Ministry of Foreign Affairs (YPEJ) (47.3%) Ministry of the Environment, Land Planning and Public Works (YPEHODE) (18.37%) Ministry of National Education and Religions (YPEPU) (8.18%) Ministry of National Defence (YPEUA) (7.69%) Ministry of National Economy (YPEUO) (7.43%) Miscellaneous (Alloi) (5%) Ministry of Agriculture (YPGE) (4.73%) Ministry of the Interior, Public Administration and Decentralisation (YPESDDA) (1.13%)
Ireland	Department of Foreign Affairs (DFA) (100%)
Italy	ART Initiative (Art.) (54%) Direzione Generale per la Cooperazione allo Sviluppo (DGCS) (26%) Central Administration (CA) (16.5%) Local Administration (LA) (3.24%)
Japan	Japan Bank for International Cooperation (JBIC) (84.6%) Ministry of Foreign Affairs (MOFA) (11.5%) Japanese International Cooperation Agency (JICA) (3.8%) Other Ministries (Oth. MIN) (0.03%) Ministry of Agriculture, Forestry and Fisheries (MAFF) Prefectures (PRF)
Korea	Miscellaneous (MISC) (97.55%) Korea International Cooperation Agency (KOICA) (2.45%)
Netherlands	Ministry of Foreign Affairs (DGIS) (MFA) (100%)
New Zealand	International Aid & Development Agency (NZAID) (100%)
Norway	Norwegian Agency for Development Cooperation (NORAD) (79.85%) Ministry of Foreign Affairs (MFA) (20%) NORFUND (NORFUND) (0.1%)
Portugal	Instituto Português de Apoio ao Desenvolvimento, I.P. (IPAD) (94.73%) Miscellaneous (MISC) (4.57%) Portuguese Government (GP) (0.7%)
Spain	Ministry of Foreign Affairs (MFA) (64.78%) Autonomous Governments (AG) (24.55%) Ministerio de Medio Ambiente y Medio Rural y Marino (MARM) (3.33%) Miscellaneous (MISC.) (3.32%) Municipalities (MUNIC) (2.55%) Ministry of Economy and Finance (ECON) (0.48%) Ministry of Agriculture, Fisheries, and Food (AGR) (0.41%) Ministry of Education and Science (EDUC) (0.18%)

	Ministry of Labour and Social Affairs (EMP) (0.13%) Ministry of Health (MOH) (0.07%) Ministry of Public Works (MPW) (0.05%) Ministry of Science and Technology (MST) (0.03%) UNIV (0.02%) Ministry of Industry and Energy (MIE) (0.02%) Ministry of Public Administration (MPA) (0.02%) Ministry of Environment (ENV)
Sweden	Swedish International Development Authority (SIDA) (99.98%)
Switzerland	Swiss Agency for Development and Co-operation (SDC) (99%) State Secretariat for Economic Affairs (Seco) (0.5%) Swiss Agency for the Environment, Forests and Landscape (SAEFL) (0.19%)
United Kingdom	Department for International Development (DFID) (100%)
United States	Agency for International Development (AID) (95.7%) Department of Interior (INTERIOR) (4.13%) State Department (STATE) (0.17%)
European Communities	European Development Fund (EDF) (70%) Commission of the European Communities (CEC) (30%)

Source: based on OECD Rio Marker database

Figure 8 shows that for the whole period 2000-2008, Denmark, Japan, Finland and Netherlands registered highest percentage of biodiversity in official development assistance. They were followed by Germany, New Zealand, Norway and Spain. A number of countries reported relatively lower percentage for marked biodiversity assistance, signifying the potential of increasing biodiversity assistance if these countries intensify biodiversity efforts in their bilateral assistance programmes.

Figure 8 Biodiversity as percentage of official development assistance (2000-2008) by country (Caveat: known under-reporting for United States and others)

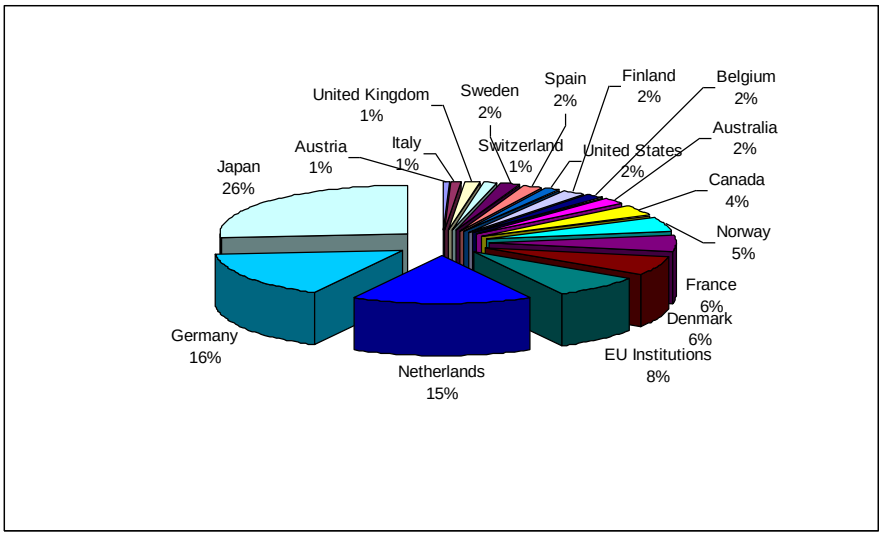


Source: based on OECD Rio Marker database

The sample of over 60 percent official development assistance marked for biodiversity demonstrates that Japan, Germany, Netherlands, and EU Institutions are the largest donors for biodiversity over the period 1998-2008 (Figure 9). Denmark, France, Norway and Canada are also significant in terms of

their proportion in the global biodiversity funding pie. As mentioned, United States and a few countries likely underreported their marked assistance for biodiversity objectives. Therefore, the global biodiversity funding pie can actually be larger if all donor countries join in the Rio markers system effectively.

Figure 9 Distribution of marked biodiversity assistance over 1998-2008 (Caveat: known under-reporting for United States and others)



Source: based on OECD Rio Marker database

Mobilizing bilateral resources

Several countries have established relevant funding targets, though not specifically for biodiversity. In Sweden, the overall target for Swedish development cooperation disbursements was planned to reach the 1% target by end of 2006, and the Environment, Peace and Stability Fund established in 1993 would reach 0.25 % of the Danish gross domestic products. The Netherlands was committed to provide 0.1% of its gross national products annually for International Nature and Environment Issues in the context of ODA, and most of the activities financed under the 0.1% allocation are related to CBD targets. Switzerland made available a credit line for the global environment in developing countries.

Biodiversity-targeted assistance programmes continue to play a valuable role in shaping international financial cooperation for biodiversity. Special programmes/initiatives targeted at biodiversity include: Australia's Pacific Governance Support Programme; Regional Natural Heritage Programme (RNHP); Austrian Global Environment Cooperation Trust Fund; Flemish Fund for Tropical Forests; Equator Initiative; IDRC's Sustainable Use of Biodiversity Program; Environment, Peace and Stability Fund; Trust Fund for Environmentally and Socially Sustainable Development; French Global Environment Facility; UNEP/Development Cooperation Ireland Multilateral Environmental Trust Fund for Africa; International Policy Programme on Biodiversity in the Netherlands; Spain's Azahar and Araucaria Programmes; Swedish International Biodiversity programme (SwedBio); Darwin Initiative; Flagship Species Fund; UK Foreign and Commonwealth Office Sustainable Development Global Opportunities Fund; and Overseas Territories Environment Programme (OTEP).

Biodiversity-related development cooperation generally is set out in national biodiversity strategies and action plans. Examples of the related strategic objectives are: to ensure continued and effective international cooperation in the conservation of biological diversity, directly between governments or through relevant international governmental and non-government organizations; to ensure a coherent implementation of / and between biodiversity-related commitments and agreements; ensure continued

and effective international cooperation for the protection of biodiversity; promote sustainable forest management in other countries; ensure the provision of adequate resources for biodiversity; to work with other countries to conserve biodiversity, use biological resources in a sustainable manner and share equitably the benefits that arise from the utilization of genetic resources; to help developing countries to include the environment issue in their development process, through the formulation of adapted public policies, or by setting up showcase projects where the principles of sustainable development and of those of the Convention are raised to the status of a code of conduct; to co-operate with the developing countries for the conservation and sustainable use of biodiversity; strengthen participation in programmes of multilateral cooperation; adopt at national and international level codes of behaviour and other measures of protection against the negative environmental and socio-economic effects of biotechnologies; to have a visible and effective international role in seeking to ensure improved biodiversity management globally by participating in international forums, sharing information and expertise, and fostering bilateral and multilateral cooperation in biodiversity conservation efforts.

OECD Development Assistance Committee has worked to improve mobilization of official development assistance. Its services include: statistical data and analysis, policy dialogue, development of guiding instrument, and peer reviews. The Rio markers for tracking aid targeting at the objectives of the three Rio conventions have been available since 1998. The High-Level meeting of the Development Assistance Committee occasionally included biodiversity in its consideration, and issued a policy statement on integrating the "Rio Conventions" in development cooperation on 16 May 2002. DAC peer reviews are a central and unique OECD activity, which seeks to monitor individual members' efforts and performance in the area of development co-operation. Each member is critically examined approximately once every four years, and five or six programmes are examined annually. The reviews generally make recommendations for its members to improve their overall performance.

Chapter 5. Large Non-governmental Organizations

Non-governmental organizations used to be a driving force of mobilizing financial resources for nature preservation and conservation, and continue to be a major player in financing for biodiversity. In 2004, international non-government organizations, including BirdLife International, Conservation International, Flora and Fauna International, The Nature Conservancy, Wildlife Conservation Society, WWF, and World Resources Institute, collectively pledged US$1 billion to support the implementation of a strong programme of work on protected areas under the Convention. Large non-governmental organizations are exposed to a wide range of revenue sources, and their financial health provides an early indication of any changes in global financing for biodiversity.

Sources of income

The total revenues of the seven large non-governmental organizations have declined by 31 percent in 2009, because the two largest conservation organizations were severely affected by the financial crisis. The Nature Conservancy experienced a 51 percent decrease in revenue and Conservation International saw a 50 percent drop in income. The adverse impact on other non-governmental organizations has not yet appeared in their annual reports. At the peak time of last decade, major non-governmental organizations registered around US$3 billion in annual revenue.

Grants from foundations and trusts to major nongovernmental organizations have decreased by 37 percent in 2009, down from over US$ 200 million in 2008. Many non-governmental organizations have begun to experience difficulties in securing grants from foundations and trusts, in particular those with heavy reliance on grant-making foundations. Conservation International drew nearly half of its funding from foundations and Birdlife International Secretariat counted on foundations for one third of its budgets. Conservation International reported a 54 percent decrease in grants from foundations in 2009.

Corporate sponsorships have continued to grow, though some non-governmental organizations were less fortunate in attracting corporate sponsorships. Major non-governmental organizations in the United States saw a decrease in corporate funding, but corporate revenues for non-governmental organizations outside the United States, for instance, WWF International and its Networks, remain relatively stable.

Individuals' contributions and membership fees are a major source of income for many non-governmental organizations. In certain years, this source of revenues accounts for half of their incomes, signifying the broad social and political base of these organizations. In 2009, individuals' contributions and membership fees generated by large non-governmental organizations have decreased by over 10 percent, though the percentage of this source of income in their total revenues has increased.

Operating revenues normally provide more than a quarter of non-government organizations' income, including royalties, investment income, gate and exhibit admissions, visitor services, education programs, licensing, publication sales, and land sales. Again, major non-governmental organizations based in the United States suffered dearly in the past few years, in particular with respect to investment income and land sales.

Major non-governmental organizations continue to see an increase in grants from local governments, federal/central government, foreign governments, multilateral institutions and aid agencies and other nongovernmental partner organizations. With the increase by 6 percent in 2009, government and non-government grants to major non-governmental organizations mounted close to US$400 million. But early signs already indicate that governmental financial support might not be sustained in the coming years, and the grants from US Government had begun to slow down.

In Canada, larger environmental organizations depend more on government funding than do small organizations, in particular for government payments for goods and services. Smaller organizations depend more on earned income from non-government sources as well as upon gifts and donations. Membership fees appear to be a more important source of revenues for smaller organizations.

Structure of spending

On average, the large non-governmental organizations spend roughly 80 percent of their funding on conservation programs, policies, awareness and education, 10 percent on fundraising, membership management and outreach, and the remaining 10 percent on general management and governance.

Fund-raising costs vary greatly across organizations. Over 15 percent of total incomes of 66 non-governmental organizations in United Kingdom were spent with the purpose of generating these incomes, going as high as 43%.

In Canada, environmental organizations rely heavily on volunteers to operate their organizations, and nearly 70 percent of environmental organizations had no paid staff. Half of environmental organizations had one to four staff persons, the majority were full time, but half of all paid staff were employed on a temporary, rather than permanent, basis.

Resource mobilizing through non-governmental organizations

Large non-governmental organizations often have their unique approaches to mobilizing resources, each with different mix of tools that have been tailored to the needs of funding bases. Organizations with research reputation tend to rely heavily on governmental funding. Swedish Environmental Institute received nearly 80% of its funding from governmental sources, and International Institute for Sustainable Development nearly 60%. Other organizations generated most incomes from membership due, which, for instance, provided under 80 percent of Greenpeace's incomes.

Fauna & Flora International work at two strategic levels: regional strategies in Eurasia, Africa, Asia Pacific, the Americas & Caribbean addressing long-term conservation priorities; and cross-sector strategies for conservation partnerships. World Resource Institute has a four-element approach: focus on results, analytical excellence, partnerships, and communications. One of its recent initiatives is to transform investments. The Nature Conservancy is known for its conservation land acquisition and conservation easements, and involved in the Coral Triangle Initiative, Reducing Emissions from Deforestation and Degradation, community-based conservation, the Micronesia Challenge, the Caribbean Challenge, development by deign for energy and mining companies, Great Rivers Partnership. WWF has developed or participated in a range of global initiatives on Amazon, China for a Global Shift, Coastal East Africa, Coral Triangle, Forest Carbon, Global Climate Initiative and Earth Hour, Green Heart of Africa, Heart of Borneo, Living Himalayas, Market Transformation, Smart Energy, Smart Fishing and Tiger.

In Canada, the percentage of environmental organizations encountering difficulties in planning and development was relatively high, in particular in comparison with the overall level of all Canadian nonprofit organizations. 65% of environmental organizations reported difficulty in planning for the future, 56% in participating in development of public policy, and 47% in adapting to change.

Financial issues stood out as one of the most frequently encountered difficulties, not only in terms of the number of responding environment organizations but also in comparison with all Canadian nonprofit organizations overall. More than half environmental organizations reported difficulties in obtaining funding from other organizations such as government, foundations or corporations, obtaining funding from individual donors, earning revenues, as well as competition with other organizations for funding or revenues, though to a less extent.

In Canada, the percentage of environmental organizations reporting external funding problems was considerably higher than that of the overall nonprofit and voluntary organizations. For instance, 75% of environment groups encountered, as a problem, reductions in government funding; 71% in unwillingness of funders to fund core operations; 64% in over-reliance on project funding; and 57% in the need to modify program. Another external funding issue – the reporting requirements of funders – was identified as a problem by almost half (49%) of environment organizations. In terms of the severity of these problems, two issues stood out for environment organizations as serious problems – reductions in government funding, and the unwillingness of funders to fund core operations.

On human resources, the most frequently encountered difficulties (by over half of the environment organizations) were found in recruiting the type of volunteers the organization needs, obtaining board members, and retaining volunteers. The less frequently encountered were in providing training for volunteers, lack of paid staff to recruit or manage volunteers, and providing training for board members. There were fewer problems in obtaining the type of paid staff the organization needs, providing staff training and development, and retaining paid staff.

Compared with planning and financing, environmental organizations reported relatively less frequently encountered difficulties in demand factors, infrastructure and relationships, though their percentage still stood higher than the sector average. 40% of environmental organizations reported difficulties in increasing demands for services or products, 49% in lack of internal capacity (e.g., administrative systems and technology), and 27% in collaborating with other organizations.

Chapter 6. Sectoral Resource Mobilization

The sectoral importance of biodiversity and ecosystem services varies, and so do the sectoral impacts on biodiversity and ecosystem services. Strategies for integrating sectoral development and biodiversity objectives, as envisaged in Article 6(b) of the Convention, have not been as well elaborated as those under Article 6(a) of the Convention. Integration media or integrators have rarely been identified at the national and international levels.

Sectoral pattern of biodiversity funding

The major sectors that are important for biodiversity may broadly cover many elements of the programmes of work under the Convention. For instance, multisector assistance contains traditionally defined biodiversity activities, and water supply and sanitation as well as fishing may correspond to programmes of work on inland water ecosystems, marine and coastal biological diversity and also island biodiversity. Agriculture and forestry can find relevance in the programmes of work on agricultural biodiversity and on forest biological diversity.

Sectoral aid contribution to biodiversity has evolved over time, but certain sectors remain of principal importance to biodiversity. Over the period 2000-2008, about 90 percent of official development assistance marked for biodiversity come from the following sectors: water supply and sanitation (30.85%), general environment protection (28.67%), forestry (13.94%), agriculture (11.22%), fishing (1.59%), energy (1.17%), transport & storage (1.11%), government & civil society (1.11%), industry (0.47%), education (0.4%), and health (0.17%) (Figures 10-15).

Marked water supply and sanitation activities include: water resources policy and administrative management, water resources protection, water supply and sanitation - large systems, basic drinking water supply and basic sanitation, river development, waste management/disposal, education and training in water supply and sanitation. In 2008, marked aid to biodiversity in water supply and sanitation was over US$950 million, a decrease of 22 percent from the year 2007, and against the overall increase by 17 percent of official development assistance in water supply and sanitation. The year 2008 marked the lowest percentage of marked biodiversity assistance from water sector in the past six years, and also the first year with considerable decrease in marked aid volume since the beginning of the century.

Marked major general environmental protection activities include: environmental policy and administrative management, biosphere protection, bio-diversity, site preservation, flood prevention/control, environmental education/ training, environmental research, urban development and management, rural development, non-agricultural alternative development, multisector education/training, research/scientific institutions. In 2008, marked aid to biodiversity in general environmental protection was under US$1,154 million, an increase of 26 percent from the year 2007, and accounting for 34 percent of total marked aid to biodiversity. For the period from 2000 to 2008, marked biodiversity aid in general environmental protection has increased steadily though its share in total marked biodiversity aid has fluctuated over time.

Marked forestry activities include: forestry policy and administrative management, forestry development, fuelwood/charcoal, forestry education/training, forestry research, forestry services. In 2008, marked aid to biodiversity in forestry was over US$410 million, a decrease of 20 percent from the year 2007, against an increase of 10% in official development assistance to forestry. The importance of forestry-related biodiversity aid in total marked biodiversity aid decreased considerably from the first half of this decade, which was nearly 22 percent in 2003, and around 12 percent in 2008.

Marked activities in agriculture include: agricultural policy and administrative management, agricultural development, agricultural land resources, agricultural water resources, agricultural inputs,

food crop production, industrial crops/export crops, livestock, agrarian reform, agricultural alternative development, agricultural extension, agricultural education/training, agricultural research, agricultural services, plant and post-harvest protection and pest control, agricultural financial services, agricultural co-operatives, livestock/veterinary services. In 2008, marked aid to biodiversity in agriculture was over US$298 million, more than doubled than in 2007, and considering that official development assistance in agriculture increased less than 13 percent. Both the percentage and volume of agriculture-related biodiversity assistance picked in 2001, and decreased dramatically since then. It is not clear that the reversal in 2008 is a temporary phenomenon or has started a new trend.

Marked activities in fishing include: fishing policy and administrative management, fishery development, fishery education/training, fishery research, fishery services. In 2008, marked aid to biodiversity in fishing was nearly US$60 million, an increase of 140 percent from the year 2007. Official development assistance in fishing was increased by 56 percent for the same period of time. The percentage of fishing-related official development assistance in total marked official development assistance recovered to 1.72 percent from a low in 2007, and is still lower than in the early 2000s. Further integration of biodiversity consideration will be beneficial to boosting aid to fishing.

The significance of energy sector to biodiversity has increased in the recent years. The percentage of energy-related biodiversity assistance picked in 2006 and still stayed relatively higher in the past three years than in the period 2001-2005. The volume of marked biodiversity assistance in energy sector reflected the same pattern. In 2008, the marked biodiversity assistance in energy sector increased by less than 10 percent, but the overall official development assistance to energy increased by over 20 percent. Further integration of biodiversity consideration in energy sector will be beneficial to boosting aid to biodiversity.

Figure 10 Marked sectoral aid to biodiversity (millions US$): Water supply and sanitation

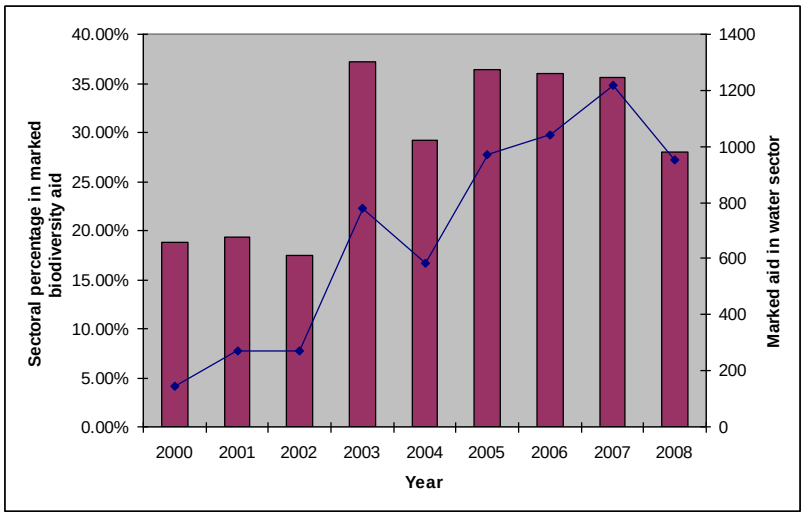


Figure 11 Marked sectoral aid to biodiversity (millions US$): General environmental protection

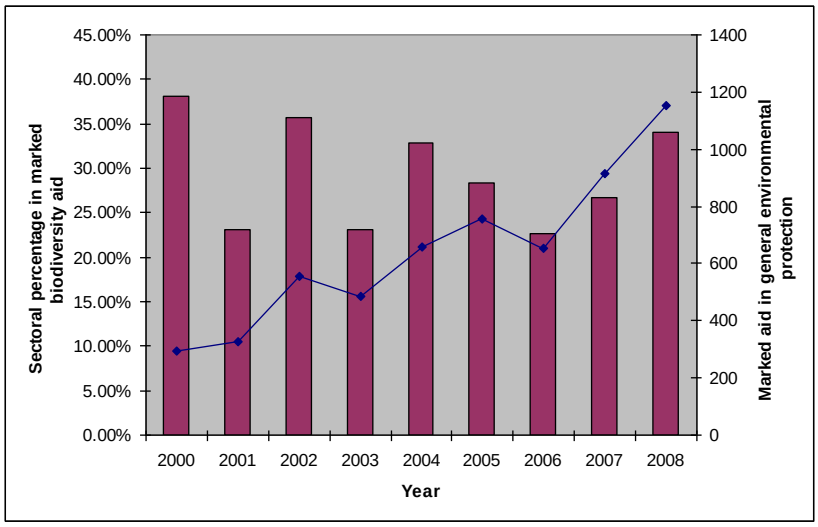


Figure 12 Marked sectoral aid to biodiversity (millions US$): Forestry sector

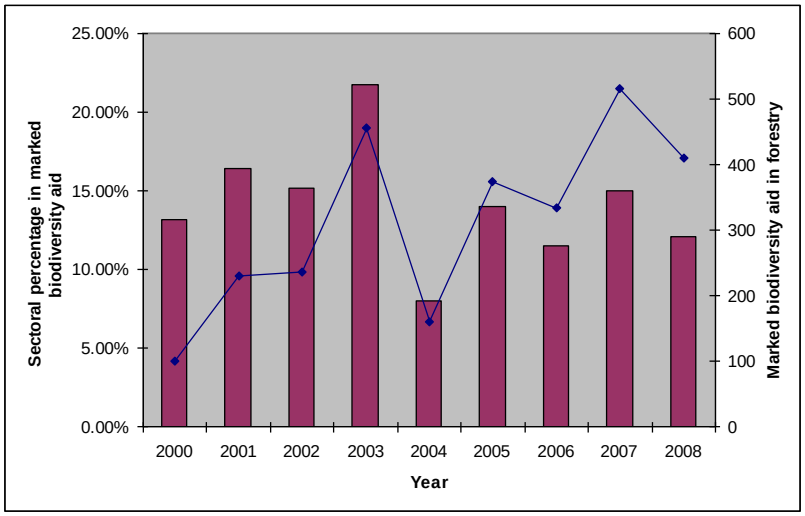


Figure 13 Marked sectoral aid to biodiversity (millions US$): Agriculture sector

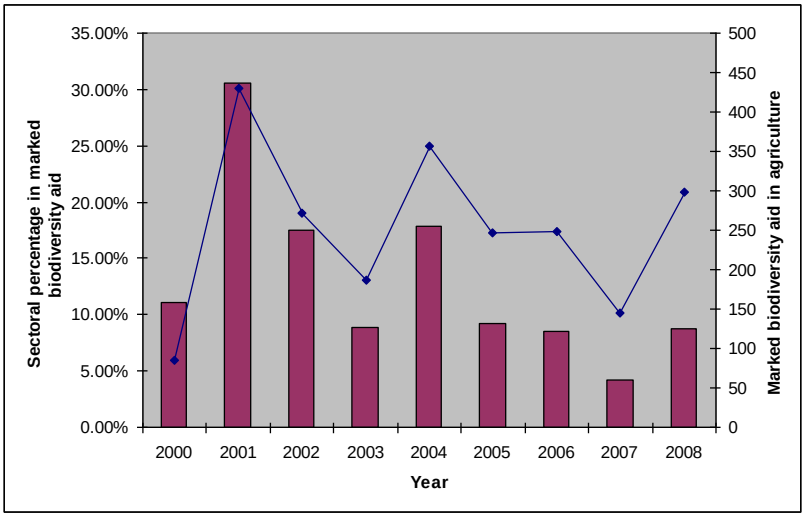


Figure 14 Marked sectoral aid to biodiversity (millions US$): Fishing sector

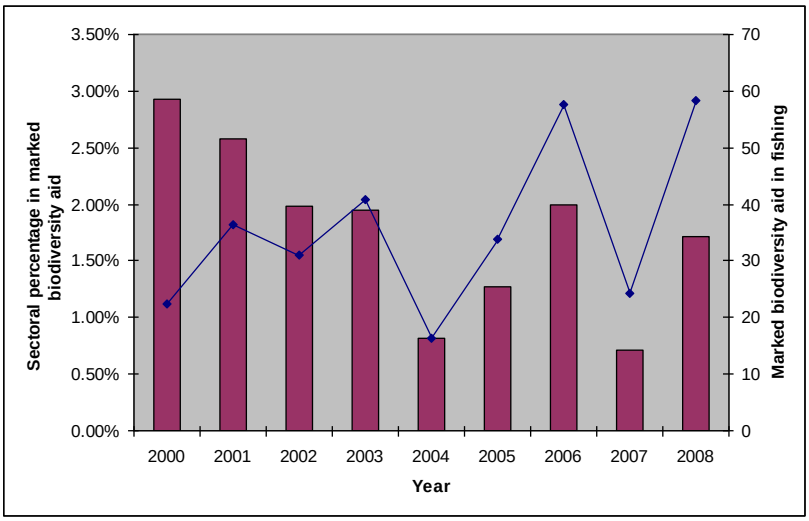
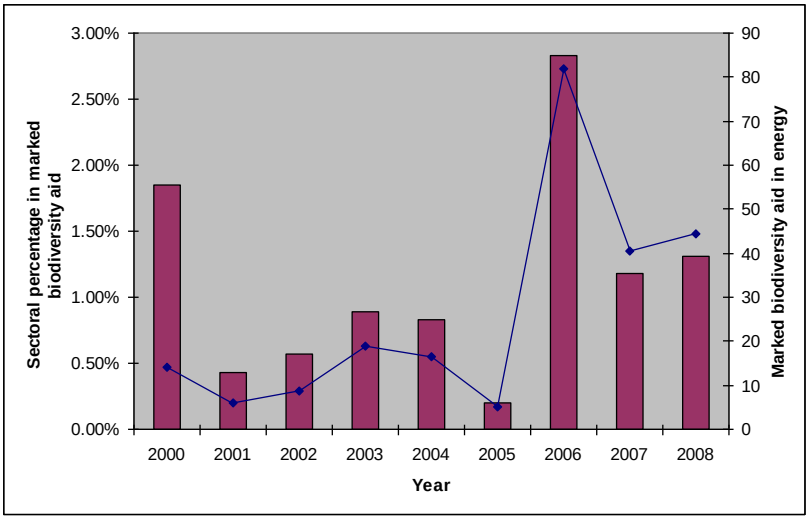


Figure 15 Marked sectoral aid to biodiversity (millions US$): Energy sector



Source: based on OECD Rio Marker database

Sectoral resource mobilization

Article 6(b) of the Convention calls for integrating, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies. Most countries considered sectoral issues in national biodiversity strategies and action plans, and no country has further elaborated integration strategies that would bring biodiversity objectives and sectoral development goals together. European Commission required environmental integration into agriculture, cohesion policy, development, economic recovery plan, employment, energy, enterprise, fisheries, internal market, research, trade and external relations, transport, economic and financial affairs.

The understanding of biodiversity integration largely remains at the information level (Table 6). The purpose of information integration is to ensure that plans and policies (and even legislation) of different and relatively independently managed governmental segments are synchronized. When flows of information between departments and divisions are inadequate, policies and laws from one sector of the government may directly conflict with equally legally valid policies and legislation in

other sectors. This can lead to considerable conflicts when such laws are put to the test, and often requires high level law-makers to make decisions in favor of one law over another. Such higher legal authorities may not have the necessary information or awareness of the importance of biodiversity conservation (and support of ecosystem services) over apparently far more tangible concerns regarding the potential impacts on the national economy in the immediate term.

One challenge to the effectiveness of information integration is that separate governmental segments (Ministers and associated personnel as well as civil servants) may promote their own key concerns and priority agendas in their domestic policies and plans (within which concerns for biological diversity may not feature particularly prominently). For instance, forest conservation and sustainable management is often in direct conflict with the pressing need to acquire foreign exchange revenue generation through immediate term lucrative logging agreements in developing countries. In many cases, effective integration thus must deal with trade-offs between biodiversity objectives and development goals.

Table 6 Conceptualizing biodiversity integration

Information integration Information integration focuses on the provision of biodiversity information, data, and policy advices that can be read or used by pertinent user or impactor sectors.
Mainstreaming Mainstreaming a biodiversity perspective is the process of assessing the implications for biodiversity of any planned action, including legislation, policies or programmes, in all areas and at all levels. It is a strategy for making biodiversity objectives an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that the dichotomy between nature and human development is not perpetuated. The ultimate goal is to achieve biodiversity objectives.
Conservation integration (horizontal expansion) Horizontal conservation integration is a strategy used to take ownership and control of both in-situ conservation and ex-situ conservation in numerous conservation sites. Horizontal integration occurs when a national park or nature museum is being taken over by, or merged with, another nature reserve. One benefit of horizontal integration is to allow economies of scale, i.e., cost advantages obtained due to expansion. Economies of scale may derive from various sources, such as financial (having access to a greater range of financial instruments at lower costs), managerial (increasing the specialization of managers and learning by doing), technological and know how (taking advantage of returns to scale), operational (bulk buying of materials through long-term contracts), and marketing (spreading the cost of publicity over a greater range of media markets).
Sustainable use integration (vertical expansion) Vertical sustainable use integration refers to the relationship between biodiversity management and economic sectors that have direct or indirect impacts on biodiversity objectives, in which biodiversity management has certain control on the user or impactor sectors. Biodiversity management thus extends its services to production sector, and is engaged in using biological resources in different production and trading. The benefit of vertical integration is to maximize development opportunities through upfront consideration of potentials of biodiversity and ecosystem services, such as various integrated production approaches.
Ecosystem integration Ecosystem integration is to bring together the component natural and economic subsystems into one system and ensure that the subsystems function together as a system of achieving both biodiversity objectives and development goals. This approach assumes that biodiversity objectives and development goals are systematically pursued separately and independently, and can be linked together under an integration framework while avoiding having to make sweeping changes to the

existing socio-economic structures. Effective ecosystem integrators who have a broad range of skills and a breadth of multidisciplinary knowledge can act as the go-between or broker between multiple natural and human systems.

Green economy integration

Instead of merely bringing biodiversity issue into development goals, green economy integration seeks to develop a new model that draws on biodiversity objectives and development goals by enabling behavioral and economic transformation. As a result, biodiversity objectives gain full consideration and equal treatment in the formulation, development, implementation, monitoring and evaluation of socio-economic strategies and policies.

The lack of progress in sectoral integration with biodiversity objectives at the national level can be observed at the policy development of global sectoral organizations (Table 7). No global sectoral organizations have formulated biodiversity-specific guidance or tools to assist with national integration between biodiversity objectives and sectoral development goals. The only sectoral tool developed under the Convention is the Guidelines on Biodiversity and Tourism Development.

Table 7 Global sectoral instruments for resource mobilization

Organizations	Mobilization instruments
Financial and fiscal affairs	
International Monetary Fund (IMF)	Fiscal adjustments
World Bank Group	2001 Environment Strategy; 2010 Environment Strategy; Global Tiger Initiative; Save Our Species; Critical Ecosystem Partnerships Fund; Global Invasive Species Programme; World Bank/WWF Forest Alliance
Technical assistance	
United Nations Children's Fund (UNICEF)	Water and sanitation programme
United Nations Development Programme (UNDP)	Protected areas; mainstreaming funded by the Global Environment Facility, the GEF Small Grants Programme (SGP), the Equator Initiative, the International Climate Initiative, the Poverty Environment Initiative, the UN-REDD Programme, Drylands Development Centre
United Nations Population Fund (UNFPA)	Research and measurement, advocacy and public awareness, integration of Population Issues into Sustainable Development Policies
	United Nations Capital Development Fund (UNCDF) United Nations Development Fund for Women (UNIFEM) United Nations Volunteers (UNV) United Nations Democracy Fund (UNDEF) United Nations Fund for International Partnerships (UNFIP) United Nations Office for Project Services (UNOPS)
Trade	
World Trade Organization (WTO)	Fisheries subsidies; WTO and multilateral environmental agreements; trade liberalization in environmental goods and services; technical assistance activities
International Trade Centre (ITC)	Sector competitiveness, including organic and biodiversity products
United Nations Conference on Trade and Development (UNCTAD)	Mandate on trade and environment; Biotrade Initiative; organic agriculture; environmental goods and services; traditional knowledge; environmental requirements and market access; services from ecosystems and related economic instruments; economic instruments and multilateral environmental agreements; sustainable tourism, eco-tourism, fair trade, eco-labeling

World Intellectual Property Organization (WIPO)	Intellectual property and traditional knowledge, and genetic resources
Labour affairs	
International Labor Organization (ILO)	Green employment report
Agriculture, forestry and fishing	
Food and Agriculture Organization of the United Nations (FAO)	Globally Important Agricultural Heritage systems (GIAHS); International Plant Protection Convention (IPPC); The Rotterdam Convention; The Codex Alimentarius; International Treaty on Plant Genetic Resources for Food and Agriculture; Global Forest Resources Assessments (FRA); Global Information System on Forest Genetic Resources; Report on the State of the World's Genetic Resources for Food and Agriculture; Code of Conduct for Responsible Fisheries; Illegal, Unreported and Unregulated (IUU) fishing; The State of the World's Animal Genetic Resources for Food and Agriculture; Global Plan of Action for Animal Genetic Resources; Commission on Genetic Resources for Food and Agriculture
International Fund for Agricultural Development (IFAD)	Sustainable livelihood approach; Strategic Framework
United Nations World Food Programme (WFP)	Environmental reviews of activities and operations; natural resource management and livelihoods activities; partnerships on environmental issues
Industries	
United Nations Industrial Development Organization (UNIDO)	Water management programme; waster management programme
World Tourism Organization (UNWTO)	2002 Quebec Declaration on Ecotourism; Global Code of Ethics for Tourism; Global Sustainable Tourism Criteria (GSTC); Sustainable Tourism – Eliminating Poverty programme (ST-EP)
Transport	
International Civil Aviation Organization (ICAO)	Committee on Aviation Environmental Protection; Standards and Recommended Practices
International Maritime Organization (IMO)	International Convention for the Prevention of Pollution from Ships; International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties; International Convention on Oil Pollution Preparedness, Response and Co-operation; International Convention on Civil Liability for Oil Pollution Damage; International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage; Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter; International Convention on the Control of Harmful Anti-fouling Systems on Ships; International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention); Marine Environment Protection Committee; Ballast Water Management Plan; Global Ballast Water Management Programme; Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection; Integrated Technical Cooperation Programme
Communications	
International Telecommunication	Access to remote sensing technologies and communications networks on environmental risks; access to/awareness of sustainable development

Union (ITU)	strategies, in areas such as agriculture, sanitation and water management, mining, etc.; monitoring of environmental abuses/enforcement of environmental regulations; knowledge exchange and networking among policy makers, practitioners and advocacy groups
Universal Postal Union (UPU)	Environment and sustainable development task force
Environmental protection	
United Nations Environment Programme (UNEP)	Environment Fund and multiple policy tools (conventions, programmes and action plans etc.), UNEP Finance Initiative; Principles for Responsible Investment
United Nations Convention to Combat Desertification (UNCCD)	UNCCD Global Mechanism; UN Decade for Deserts and the Fight against Desertification 2010-2020
United Nations Framework Convention on Climate Change (UNFCCC)	Mitigation and adaptation funds
World Meteorological Organization (WMO)	IPPC assessments; assessment of water resources
United Nations Human Settlements Programme (UN-HABITAT)	Shelter and Sustainable Human Settlements Development; Monitoring the Habitat Agenda; Regional and Technical Cooperation; Financing Human Settlements
Health	
World Health Organization (WHO)	WHO guidelines for good agricultural and collection practices (GACP) for medicinal plants WHO guidelines for assessing quality of herbal medicines with reference to contaminants and residues
Education	
United Nations University (UNU)	Research reports and projects
United Nations Educational, Scientific and Cultural Organization (UNESCO)	International Hydrological Programme (IHP); World Water Assessment Programme; Programme on the Management of Human Transformations (MOST); Man and the Biosphere (MAB) Programme; International Basic Sciences Programme (IBSP); Intergovernmental Oceanographic Commission; International Geoscience Programme; Natural Disaster Reduction Programme; UN Decade on Education for Sustainable Development (2004-2013); World Heritage Fund; World Water Development Report; World Science Report
United Nations Institute for Training and Research (UNITAR)	Environmental Programme (environmental governance and democracy; climate change; decentralized cooperation; environmental law; sustainable development)
Humanitarian affairs	
United Nations High Commissioner for Refugees (UNHCR)	Site planning and settlement establishment; Water and Sanitation; Reforestation; Household energy conservation; Sustainable agriculture; Environmental education and awareness raising; Soil and water conservation; Environmental friendly shelter construction; Livestock and anima husbandly; Environmental assessment, monitoring and evaluation
Office for the Coordination of Humanitarian Affairs United Nations (OCHA)	The Joint UNEP/OCHA Environment Unit as the integrated United Nations emergency response mechanism to activate and provide international assistance to countries facing environmental emergencies

Chapter 7. Regional Resource Mobilization

Biodiversity and ecosystem services are not evenly distributed across the planet. Africa is home to roughly one fifth of global biodiversity, Asia one third and Latin America and the Caribbean two fifths. In the long run, global investment to biodiversity and ecosystem services will likely follow this pattern of distribution. Substantial regional and subregional initiatives, institutions and mechanisms are available for resource mobilization, but have not featured adequately in the Convention process.

Regional pattern of biodiversity assistance

Figures 16-18 describe the pattern of biodiversity assistance in the developing regions. Integrating biodiversity into official development assistance to Africa delivered further positive results. The slight increase in marked official development assistance for biological diversity in Africa benefited from an increase in the percentage of biodiversity in overall official development assistance, i.e. from around 1.57% in 2007 to 1.67% in 2008. Although the volume of marked biodiversity assistance to Africa has fluctuated over years, the percentage of biodiversity in official development assistance has gained steadily in the recent years. Given that the biodiversity percentage is still relatively low for this region, it is expected that marked biodiversity assistance can have further space for increasing in the coming years.

In 2008, Asian countries received US$ 1,521 million of marked official development assistance for biological diversity, a nominal decrease by 18 percent from 2007. Over the period from 2000 to 2008, marked aid to biodiversity accounted for 3.13 percent of overall official development assistance to Asia, and increased from an average of 2.47 percent for 2000-2001 to an average of 3.26 percent for 2007-2008. Considering that nominal official development assistance to Asia increased by 27 percent in 2008, the volume loss of marked aid to biodiversity is largely due to compositional changes in overall official development assistance.

In 2008, Latin America and the Caribbean region received US$460 million marked aid to biodiversity, a decrease by 6.7 percent than in 2007. Over the period 2000-2008, marked aid to biodiversity accounted for 4.4 percent of overall official development assistance, the highest among all regions, and gained from an average of 3 percent for 2000-2001 to an average of 5.27 percent for 2007-2008. Given a 12 percent increase in nominal official development assistance to this region in 2008, the volume loss of marked aid to biodiversity is largely due to the compositional changes in overall official development assistance.

Figure 16 Marked regional aid to biodiversity (millions US$): Africa

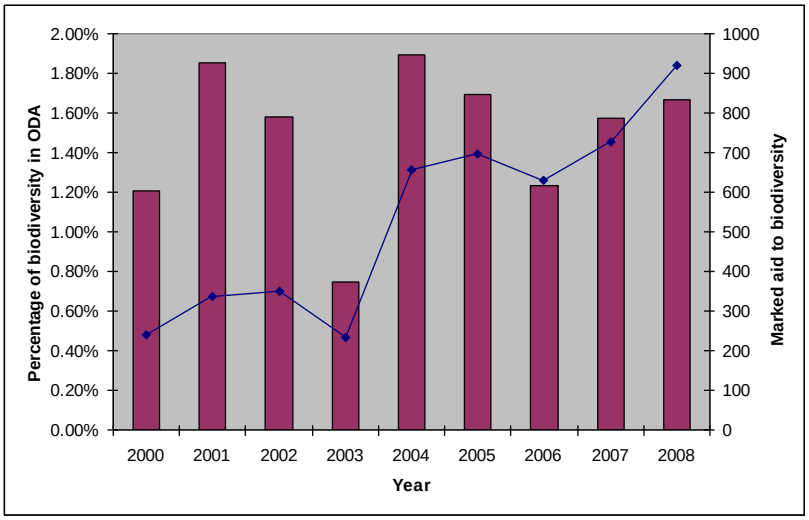


Figure 17 Marked regional aid to biodiversity (millions US$): Asia and the Pacific

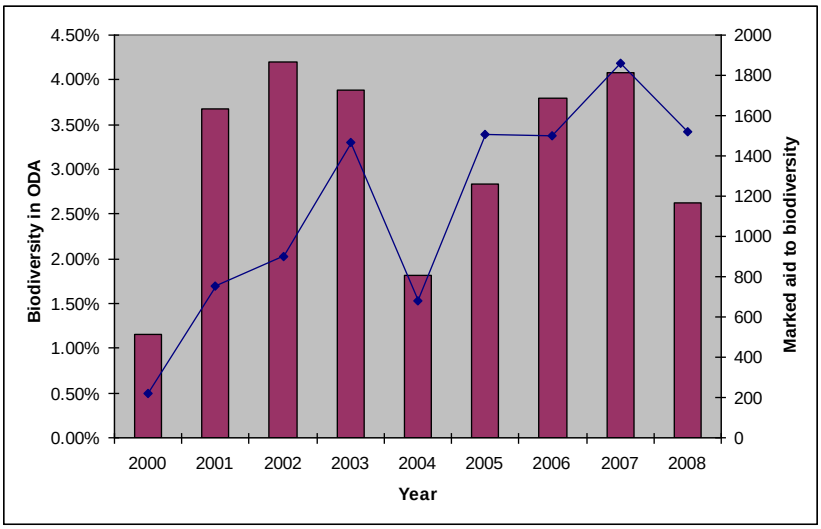
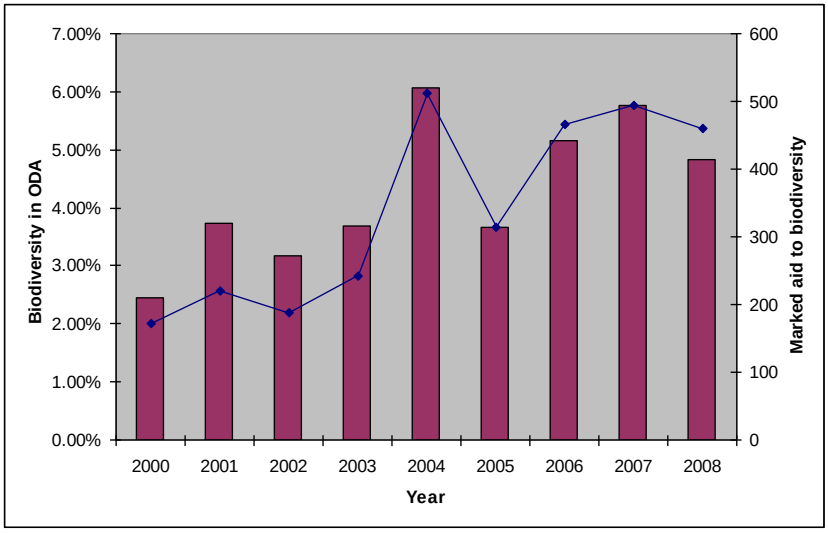


Figure 18 Marked regional aid to biodiversity (millions US$): Latin America and the Caribbean



Source: based on OECD Rio Marker database

Figures 19-21 depict the pattern of marked donor contributions (2000-2008) to the developing regions. Those donor countries that have under-reported through the Rio-markers are most likely reflected inadequately here. For Africa, Germany, Netherlands, EU Institutions, France and Norway are the top five financial contributors. Other major donors in Africa include: Denmark, Japan, Canada, Belgium, Finland, Sweden and United States.

In Asia and the Pacific, Japan provided nearly half of all the marked bilateral assistance to the region, and Netherlands, Germany and Denmark followed. Australia, France, European Union, Canada and Norway were also significant contributors in sustaining biodiversity in the region. Other major donors were United Kingdom, Italy, Switzerland and Finland.

The region of Latin America and the Caribbean has embraced a diverse pool of external donor funding. Germany, Netherlands and Japan together provided nearly sixty percent of the total marked assistance to biodiversity in this region. Other significant donors include EU institutions, Spain, Denmark, United States, and Canada. Norway, Switzerland, Finland, Belgium, France and Austria are also relatively visible in this region.

Figure 19 Pattern of donor contribution to biodiversity (Caveat: known under-reporting for United States and others): Africa

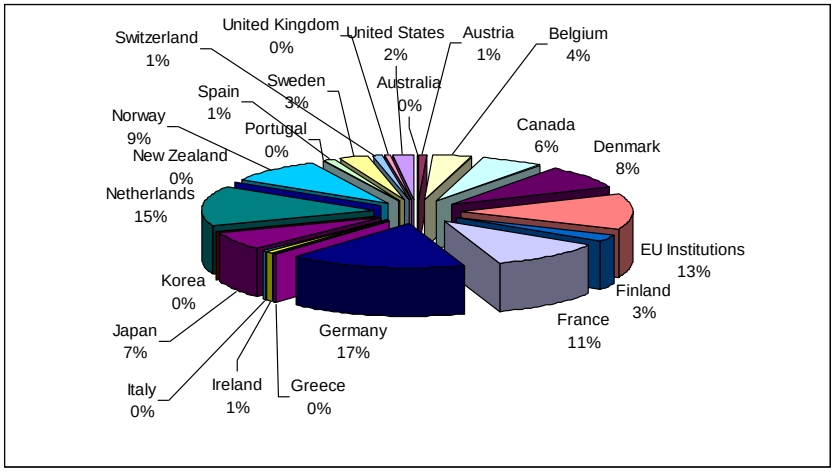


Figure 20 Pattern of donor contribution to biodiversity (Caveat: known under-reporting for United States and others): Asian and the Pacific

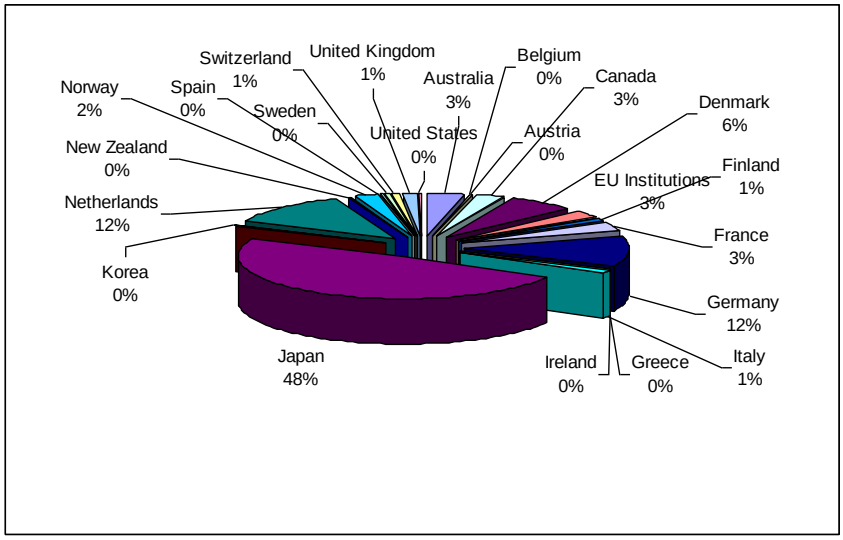
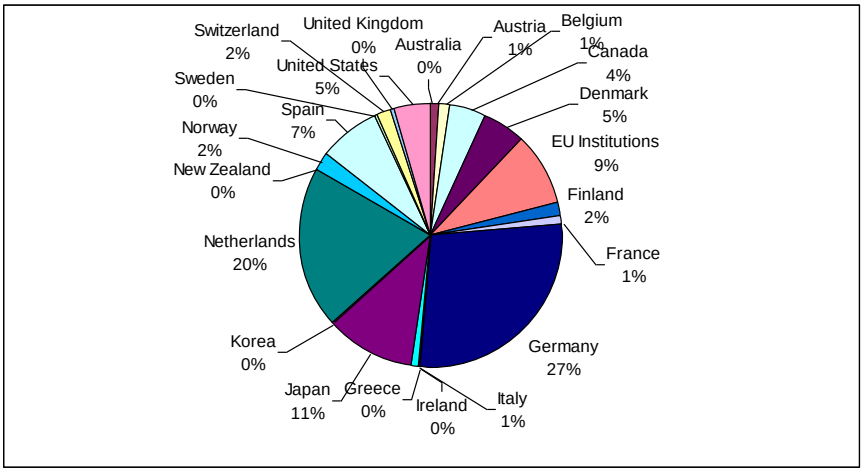


Figure 21 Pattern of donor contribution to biodiversity (Caveat: known under-reporting for United States and others): Latin America and the Caribbean



Source: based on OECD Rio Marker database

Regional development banks

In its strategic commitment to environmental sustainability, Asian Development Bank (ADB) emphasizes protecting biological diversity along with the sustainable management of forest and other natural resources for provision of clean water supply. ADB approved ca. US$1.7 billion for loans and $215 million for technical assistance projects with biodiversity conservation components from 1990 to 2009, which have focused on fisheries and coastal zone management; forestry, wildlife conservation, and watershed management; and protected area management and biodiversity conservation. ADB has allocated $5 million under its Climate Change Fund (CCF) to finance Reduced Emissions from Deforestation and Degradation (REDD)-related projects, and supports innovative biodiversity conservation efforts focusing on critical ecosystems including the Coral Triangle Initiative, Heart of Borneo Initiative, and The Greater Mekong Subregion Biodiversity Corridors Initiative. In addition to the flagship initiatives, other projects include: the Integrated Coastal Resources Management in the Philippines, the People's Republic of China (PRC)-GEF Partnership on Land Degradation, the Sanjiang Plain Wetlands Protection Project, Protected Area Management and Wildlife Conservation in Sri Lanka and the Shaanxi-Qinling Mountains Integrated Ecosystem Development.

Inter-American Development Bank planned to develop a Strategic Framework for Ecosystem and Biodiversity Management to achieve its goals of mitigating biodiversity impacts associated with Bank lending and helping countries to recognize biodiversity's value to national development. The Bank seeks to promote projects that specifically address biodiversity threats in the planning process; increase funding for biodiversity-enhancing projects; develop a monitoring and evaluation system to track the impact on biodiversity of the Bank's project portfolio; develop a decision-support system to help staff identify key biodiversity areas and other areas of high biological value; mainstream biodiversity considerations into Country Environmental Assessments and Country Strategies; increase the use of Global Environment Facility (GEF) funding for biodiversity projects initiated through the Bank; protect key ecosystem services, such as water regulation, carbon sequestration, and nature-based tourism. However, biodiversity and ecosystem services were more visible in its past funding portfolio than now.

Regional comparison of national resourcing

Table 8 provides the available information on government environmental spending in developing countries and countries with economies in transition, which can be compared with the information contained in Table 1 of the present report. Table 9 depicts the evolution of budgetary situation of the ministries and departments of the environment in seven Latin American countries over time. The downward and upward trends can only be established for Argentina and Mexico between 1995 and 2005. For other countries, there have been opposite changes from the period 1995-2000 to the one 2000-2005. As a proportion of current GDP, Argentina's environmental budget has remained relatively stable at 0.01 percent. In 2005, the proportion reached 0.3 percent in Mexico and 0.06 percent in Brazil. But overall, the proportion varied between 0.01 percent and 0.05 percent of GDP.

Since biodiversity is a portion of environmental spending, national budgetary allocations to biodiversity can be substantially smaller. However, if environmental affairs, in particular biodiversity objectives, are only partially covered by environmental ministries, the measurement of budgets of environmental ministries may considerably underestimate the actual budgetary allocations to the environment including biodiversity.

Many ministries of environment have been relatively newly created and poorly endowed with financial resources. The new structures are made up of new and former departments transferred from other ministries. For example in El Salvador, the Protected Areas Department has been moved to the

Ministry of Environment and Natural Resources (MARN) from the Ministry of Agriculture, but the CITES office stayed at the latter. Due to limited resources, the activities of these ministries are often project-driven as they are looking for externally funded projects to cope with their task.

Even important regional and subregional organizations also face the shortage of funding. Central American Commission for Environment and Development (CCAD) suffers from lack of own personnel (most of the work is done by the regional technical committee representatives and project personal), lack of own resources (mainly the Executive Secretary and its physical infrastructure is supported by the budget of Central American Integration System (SICA), and absence of political will to have a common position from/for all countries (conflicts of interests occur often and lack of consensus limits the scope of work).

Several national biodiversity strategies and action plans provide a measurement of funding gaps. In Tajikstan, the state budget share will be 35% of the total amount of expenses needed for its national biodiversity strategy and action plan (NBSAP). Funds from environmental foundations will make 10%. Some funds (20%) will be provided by other nature managers and economic institutions (land-users, forestry, NGOs, etc.) while implementing programs on sustainable development of particular economic branches supported by international investments and grants. The support of international financial structures and foreign donors (nearly 30-35%) will also be required. In Moldova, the budget share for NBSAP activities will be kept at the level of 12–14% focusing mainly on local budgets. The weight of resources of the State Forest Service and landowners will constitute 48–50%. The support of international financial institutions and foreign donors will be approximately 30–32%, and the rest (6–8%) will be completed by the ecological funds. The Estonian NBSAP covers such main sectors as forestry, fishery, agriculture, transport, industry, tourism, nature protection, education, biological resources and biotechnology, and landscapes, hunting, national defence, border control. The actions are grouped by preferences: very important, important, comparatively important and less important. Finances exist or are presumed to exist for only 40% of the actions.

The status of funding gaps in protected areas management also can give some insight to the overall funding shortage in biodiversity financing. UNDP and The Nature Conservancy (TNC) conducted a survey using the Financial Sustainability Scorecard for National Systems of Protected Areas in 18 Latin American and Caribbean countries, and found that one third of funding needs for basic management implementation are not met, which prevents those areas from functioning fully to ensure the provision of ecosystem services such as water regulation and supply, carbon capture and adaptation and resilience to climate change.

Table 8 Percentage of environmental protection in national governmental expenditure

Country	General Government (year)		Central Government (year)
Africa			
Congo, Republic of			0.3 (2003)
Ethiopia			0.02p (2002)
Egypt		0.35p (2007)	0.35p (2007)
Lesotho		0.75 (2007)	0.75 (2007)
Madagascar			0.14 (2007)
Mauritius	4.34 (2002)	0.98 (2008)	0.45 (2008)
Tunisia			1.15 (2007)
Asia			
Bahrain		0.69 (2005)	0.69 (2005)
Bangladesh			0.08 (2008)
China		1.07p (2007)	0.07 (2007)

Iran	1.09 (2003)	1.68 (2007)	1.54 (2007)
Kuwait	0.1 (2003)	0.05 (2009)	0.05 (2007)
Maldives	0.74 (2006)	1.54p (2008)	1.54 (2008)
Pakistan			0.01 (2008)
Thailand		0.13p (2008)	0.14p (2008)
Latin America and the Caribbean			
Argentina	0.19p (2004)		0.29 (2004)
Bolivia	2.22 (2002)	1.74 (2007)	0.56 (2007)
Chile		0.32 (2008)	0.34 (2008)
Costa Rica		0.51 (2007)	0.53 (2007)
Dominican Republic			0.66 (2002)
El Salvador	0.19 (2003)	0.16 (2007)	0.17 (2007)
Jamaica	0.2 (2002)		
Trinidad and Tobago			1.46 (2007)
St. Vincent and the Grenadines	1.42 (2003)	1.22 (2004)	
Central and Eastern Europe			
Belarus	1.38p (2004)	0.85 (2008)	1.17 (2008)
Bulgaria		3.07 (2008)	0.94 (2008)
Croatia		0.67 (2008)	0.26 (2008)
Czech Republic	2.24 (2002)	2.59p (2008)	1.33p (2008)
Georgia		1.57 (2007)	0.66 (2007)
Hungary	1.84 (2002)	1.42 (2007)	0.98 (2007)
Kazakhstan	0.4 (2002)	0.59 (2007)	0.44 (2007)
Kyrgyz Republic	0.01 (2006)		
Latvia		2.67 (2008)	2.81 (2008)
Lithuania	0.28 (2002)	2.55p (2008)	0.55p (2008)
Moldova	0.41 (2003)	0.36 (2008)	0.41 (2008)
Poland	1.85 (2003)	1.43 (2008)	0.24 (2008)
Romania	0.36p (2002)	1.11 (2005)	0.62 (2005)
Russian Federation	0.41 (2002)	0.14 (2008)	0.08 (2008)
Slovak Republic	1.82p (2003)	2.2p (2008)	1.16p (2008)
Slovenia	1.61 (2002)	1.48 (2008)	0.93 (2008)
Ukraine	0.63p (2004)	0.55 (2008)	0.48 (2008)

Source: International Monetary Fund (2003, 2004, 2005, 2006, 2007, and 2009)

Table 9 Change in total budget executed by ministries and departments of the environment, and as a proportion of current GDP

Country	Change in total environmental budget (%)			Percentage of GDP		
	1995-2000	2000-2005	1995-2005	1995	2000	2005
Argentina	-2.6	-9.0	-11.4	0.01	0.01	0.01
Belize		71.8			0.015	0.019
Brazil		55.2			0.05	0.06
Chile	94.9	-9.3	76.7	0.014	0.026	0.015
Colombia	-65.5	380.2	65.3	0.05	0.02	0.05
Mexico	1,363.8	66.3	2,335.3	0.03	0.24	0.30
Uruguay	102.4	-47.9	5.3	0.01	0.02	0.01

Source: United Nations (2010)

Regional mobilization of resources

Substantial regional and subregional processes are already available in assisting with resource mobilization at the regional, subregional and national levels (Table 10). These processes fall broadly into three categories: ministerial meetings, regional treaties and programmes, and regional organizations.

Regional and subregional environmental ministerial forums are organized in every major region on a regular basis. African Ministerial Conference on the Environment (AMCEN) is organized by UNEP and UN Economic Commission for Africa every two years. The Ministerial Conference on Environment and Development in Asia and the Pacific (MCED) is organized by UN Economic and Social Commission for Asia and the Pacific every five years. The Forum of Ministers of the Environment of Latin America and the Caribbean has been supported by the Inter-Agency Technical Committee (ITC) comprising of major international financial and technical cooperation institutions that are active in this region. Environmental ministerial forums are also often organized at the subregional level.

Regional and subregional agreements and action plans are frequently used as a tool to catalyze actions at regional, subregional and national levels. Many regional and subregional environmental agreements have addressed biodiversity objectives, and some regions and sub-regions have developed biodiversity-specific agreements, such as African Convention on the Conservation of Nature and Natural Resources (Algiers Convention), Protocol concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region, Convention on the Conservation of Wildlife and their Natural Habitats in the Countries of the Gulf Cooperation Council, Convention on the Conservation of Nature in the Pacific (Apia Convention), Central American Convention for the Conservation of Biodiversity and the Protection of Priority Wetlands, Protocol Concerning Specially Protected Areas and Wildlife (SPAW) in the Wider Caribbean Region, and Black Sea Biodiversity and Landscape Conservation Protocol to the Convention on the Protection of the Black Sea against Pollution. Other regions and sub-regions have formulated biodiversity-specific strategies, including SADC Regional Biodiversity Action Plan, Work Plan on Biodiversity in the ECO Region for the years 2007-2015, NEASPEC subregional conservation strategy for target species, Pacific Islands Action Strategy for Nature Conservation, Regional Strategy for the Sustainable Use and Conservation of Biodiversity in Mesoamerica, Regional Biodiversity Strategy of the Andean Community, Regional Amazon Strategy on Biodiversity, and Pan-European Biological and Landscape Diversity Strategy.

Regional and subregional organizations devoted to biodiversity have begun to emerge. With support from European Commission, the ASEAN Centre for Biodiversity (ACB) was officially established in 2005. Many other regional and subregional organizations have acquired explicit mandates to address biodiversity challenges in their regions.

Table 10 Regional and subregional processes for resource mobilization

Organization	Instruments
Africa	
African Union (AU)	African Ministerial Conference on the Environment (AMCEN) (UNEP, UNECA) (every two years); Environment Initiative for the New Partnership for Africa's Development (NEPAD); African Convention on the Conservation of Nature and Natural Resources (Algiers Convention); Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (Nairobi Convention); Convention for Cooperation in the Protection and Development of the Marine

	and Coastal Environment of the West and Central African Region (Abidjan Convention); Lusaka Agreement on Co-operative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora
Community of Sahel- Saharan States (CEN-SAD)	
North Africa	
Arab Maghreb Union (AMU); Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA); League of Arab States	Convention for the Conservation of the Red Sea and Gulf of Aden Environment (Jeddah Convention); Protocol concerning Regional Cooperation in Combating Pollution by Oil and other Harmful Substances in Cases of Emergency
Central Africa	
Economic and Monetary Community of Central Africa (CEMAC)	CEMAC Environmental Action Plan
Conference of Ministers for the Forests of Central Africa (COMIFAC)	Summit of Head of States of Central Africa on the Conservation and Sustainable Management of the Forest Ecosystems; Congo Basin Forests Partnership; COMIFAC Convergence Plan
Economic Community of Central African States (ECCAS)	Implementation of NEPAD Environmental Initiative; general policy on environment and natural resource management
East Africa	
East African Community (EAC); Common Market for Eastern and Southern Africa (COMESA); Intergovernmental Authority on Development (IGAD); Indian Ocean Commission (IOC)	Nairobi Convention on the Protection and Management of the Coastal and Marine Environment of the Eastern African Region; Protocol concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region; Protocol concerning Co-operation in Combating Marine Pollution in Cases of Emergency in the Eastern African Region
West Africa	
Economic Community of West African States (ECOWAS); West African Economic and Monetary Union (WAEMU)	Common Policy to Improve the Environment (WAEMU); Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region (Abidjan Convention)
Southern Africa	
Southern Africa Development Community (SADC)	SADC Regional Biodiversity Action Plan; The Protocol on Wildlife Conservation and Law Enforcement (1999)
	Asia
Ministerial Conference on Environment and Development in Asia and the Pacific (MCED), organized by UN Economic and Social Commission for Asia and the Pacific (ESCAP)	Regional Strategy for Sound and Sustainable Development in Asia and the Pacific; Regional Action Programme for Environmentally Sound and Sustainable Development 1995-2000; Regional Action Programme for Environmentally Sound and Sustainable Development 2001-2005 and Kitakyushu Initiative for a Clean Environment; Regional Implementation Plan for Sustainable Development in Asia and the Pacific 2006-2010, and the Seoul Initiative on Environmentally Sustainable Economic Growth (Green Growth)
West Asia	
Council of Arab Ministers Responsible for the Environment (CAMRE), organized by League of Arab States	The Arab Initiative on Sustainable Development (AISD)
Islamic Development Bank (IDB)	Priorities within its technical cooperation programme include

	agricultural research and extension, crop protection, soil conservation, livestock breeding and husbandry, water management, and environmental sustainability
Regional Organization for the Protection of the Marine Environment (ROPME)	Action Plan for the Protection and Development of the Marine Environment and the Coastal Areas, the Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution, and the Protocol concerning Regional Co-operation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency.
Regional Organisation for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA)	Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment (Jeddah Convention); Action Plan for the Conservation of the Marine Environment and Coastal Areas in the Red Sea and Gulf of Aden
Gulf Cooperation Council (GCC)	Convention on the Conservation of Wildlife and their Natural Habitats in the Countries of the Gulf Cooperation Council
Central Asia	
Caspian Environment Programme (CEP)	Framework Convention for the Protection of the Marine Environment of the Caspian Sea, the Strategic Action Programme (SAP) and National Caspian Action Plans
International Fund for the Aral Sea Rehabilitation (IFAS), Intergovernmental Sustainable Development Commission (ISDC), Interstate Commission for Water Coordination (ICWC)	Agreement on Joint Actions for the Solution of Problems of the Aral Sea and the Aral Sea Region in 1993, and Agreement on the Cooperation in the Field of Environmental Protection and Rational Resource Use in March 1998
Economic Cooperation Organization (ECO) and Ministerial Meeting on Environment	Work Plan on Biodiversity in the ECO Region for the years 2007-2015
South Asia	
South Asia Co-operative Environment Programme (SACEP)	(http://www.sacep.org/)
South Asia Association for Regional Cooperation (SAARC)	SAARC Summits; meetings of SAARC Environment Ministers; SAARC Environment Action Plan; SAARC Coastal Zone Management Center (SCZMC); SAARC Forestry Center (SFC); South Asia Environment Outlook (SAEO) 2009; SAARC Convention on Cooperation on Environment in April 2010
East Asia	
NOWPAP Intergovernmental Meeting (IGM)	Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Northwest Pacific Region (NOWPAP)
Meeting of Senior Officials on Environmental Cooperation in North-East Asia	North-East Asian Subregional Programme for Environmental Cooperation (NEASPEC); Core Fund based on voluntary contribution of member countries of NEASPEC; NEASPEC subregional conservation strategy for target species
Tripartite Environment Ministers Meeting (TEMM)	The Northeast Asian Conference on Environmental Cooperation (NEAC) and the Tripartite Environment Ministers Meeting (TEMM)
Southeast Asia	
Mekong River Commission (MRC)	Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin; The Mekong Programme - Regional Cooperation Programme for the Sustainable Development of Water and Related Resources in

	the Mekong Basin
Association of Southeast Asian Nations (ASEAN) and ASEAN Ministerial Meeting on Environment (AMME)	ASEAN Sub-regional Environmental Programmes (ASEP I, II, and III); Strategic Plan of Action on the Environment, 1999-2004 (SPAE); ASEAN Vision 2020 and the Vientiane Action Programme 2004-2010 (VAP); ASEAN Center for Biodiversity
Coordinating Body on the Seas of East Asia (COBSEA)	Action Plan for the Protection and Development of the Marine and Coastal Areas of the East Asian Region
Partnerships in Environmental Management for the Seas of East Asia (PEMSEA)	Haikou Partnership Agreement in December 2006: the East Asian Seas (EAS) Congress, held every three years, the East Asian Seas (EAS) Partnership Council, the PEMSEA Resource Facility, and the Regional Partnership Fund
Pacific	
Pacific Islands Forum; Council of Regional Organizations of the Pacific (CROP)	Annual meetings of Forum Heads of State and Government; Pacific Plan; Pacific Islands Framework for Action on Climate Change; Pacific Islands Regional Ocean Policy, Pacific Islands Action Strategy for nature Conservation, Regional Strategy for Solid Waste, Pacific Regional Action Plan on sustainable Water Management (RAP), Pacific Wastewater Policy and Framework for Action
Pacific Regional Environment Programme (SPREP)	1986 Convention for the Protection of the Natural Resources and Environment of the Pacific; 1976 Convention on the Conservation of Nature in the Pacific (Apia Convention); Action Plan; Over 90% of SPREP funding comes from donors.
Latin America and the Caribbean	
Organization of American States (OAS) (1889/1951); Economic Commission for Latin America and the Caribbean (ECLAC) (1948); Inter-American Development Bank (IDB) (1959)	Forum of Ministers of the Environment of Latin America and the Caribbean; Latin American and Caribbean Initiative for Sustainable Development (ILAC); Regional Action Plan (RAP); Inter-Agency Technical Committee (ITC)
Central America	
Central American Integration System (SICA)	Central American Convention for the Conservation of Biodiversity and the Protection of Priority Wetlands (1992), the Central American Convention on Climate Change, the Mexico-Central America Declaration on Sustainable Development; Central American Policy on the Conservation and Wise Use of Wetlands; Plan of Action for the Integrated Development of Water Resources in Central America (PACADIRH)
Central American Commission for Environment and Development	Council of Ministers of the Central American Commission for Environment and Development (CCAD); Environmental Plan for the Central American Region (PARCA); Regional Strategy for the Sustainable Use and Conservation of Biodiversity in Mesoamerica (ERB)
Central American Council on Forests and Protected Areas (CCAB-AP)	Central America Forestry Strategy (EFCA)
Central American Free Trade Agreement (CAFTA)	Environment chapter (Chapter 17 of the agreement); Environmental Cooperation and Capacity Building Mechanism
South America	
Andean Community	Regional Biodiversity Strategy of the Andean Community;

	Andean Committee of Environmental Authorities (CAAM); Andean Environmental Agenda;
Amazon Cooperation Treaty Organization	Regional Amazon Strategy on Biodiversity; strategic plan 2004-2012
Mercosur (Southern Cone Common Market)	Working group on the environment (SGT6); Florianopolis Framework Agreement on the Environment; Specialized Meeting of Environment Ministers
Caribbean	
Organization of Eastern Caribbean States (OECS); Caribbean Community and Common Market (CARICOM); Forum of Caribbean States (CARIFORUM); Association of Caribbean States (ACS)	Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region (Cartagena Convention); Regional Activity Centres (RACs) and Regional Activity Networks (RANs); Protocol Concerning Co-operation in Combating Oil Spills in the Wider Caribbean Region; Protocol Concerning Specially Protected Areas and Wildlife (SPAW) in the Wider Caribbean Region; and Protocol Concerning Pollution from Land-Based Sources and Activities
Eastern Europe	
HELCOM	Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki Convention); HELCOM Ministerial Meeting
Commission on the Protection of the Black Sea Against Pollution (Black Sea Commission or BSC)	Convention on the Protection of the Black Sea against Pollution (Bucharest Convention); Black Sea Biodiversity and Landscape Conservation Protocol to the Convention on the Protection of the Black Sea against Pollution
European Union	Environmental Action Programme (EAP); EU bird directive; EU habitat directive
Council of the Pan European Biological and Landscape Diversity Strategy	Pan-European Biological and Landscape Diversity Strategy (PEBLDS); ‘Biodiversity in Europe’ conference series; ministerial conference ‘Environment for Europe’; Pan European 2010 Biodiversity Implementation Plan
Regional Environmental Center for Central and Eastern Europe (REC)	REC Strategy 2006-2010

Chapter 8. Payment for ecosystem services

Payment for ecosystems services refers to transfer of resources from beneficiaries of ecosystem services to ensure that ecosystem use changes will not be made or will be made in their interest. One of the first, perhaps still largest, such local transactions was in New York where authorities opted to invest $1-1.5 billion in natural capital to restore the polluted Catskill Watershed for the ecosystem service of water purification in order to meet the national standards of quality of drinking water, which contrasted dramatically with the estimated $6-8 billion cost of constructing a water filtration plant plus the $300 million annual running costs. The largest national payment for ecosystem services is in China where the central government announced, in 2000, a $43 billion Grains for Green program, offering farmers grain in exchange for not clearing forested slopes for farming. The largest global payment for ecosystem services so far is the International Climate and Forests Initiative announced by Norway at the 2007 Bali Conference, which provided $500 million towards the creation and implementation of national-based, REDD activities in Tanzania.

Conceptualizing payment for ecosystem services

Ecosystem services are the benefits people obtain from ecosystems – dynamic complexes of plant, animal and micro-organism communities and their nonliving environment interacting as functional units. Some definitions of ecosystem services include ecosystem goods. The primary purpose of payment for ecosystem services is to enable ecosystem use changes to be made in a way that ecosystem services can be maintained or enhanced for their beneficiaries who make such payments. Payment for ecosystem services can be a preventive measure requiring that no ecosystem use changes should be made. In most cases, payment for ecosystem services is designed to encourage a particular path of ecosystem use changes.

Some options of ecosystem use changes can have more impacts on ecosystem services than others, depending on local circumstances. Indications of vicious ecosystem use changes can be characterized as follows:

- Changes in local land/water use and cover, often resulting in habitat change, loss and degradation
- Species introduction or removal, with particular concern over invasive alien species and introduced pathogens
- Technology adaptation and use, leading to overexploitation or over-harvest
- External inputs (e.g., fertilizer use, pest control, and irrigation)
- Climate change

Payment for ecosystem services seeks to avoid these vicious ecosystem use changes and minimize their impacts on biodiversity and ecosystem services. But effective payment for ecosystem services must address demographic, economic, sociopolitical, technological and even cultural and religious causes of these ecosystem use changes. For instance, rapid growth of human population or market demands can lead to overexploitation assisted by new technology.

Tradability of ecosystem services requires that sustainers and beneficiaries of ecosystem services are not the same, or at least that beneficiaries must go beyond the scope of sustainers. In many cases, sustainers of ecosystem services also own the land or water that hosts those ecosystem services. Different ecosystem services encompass different characters of tradability (Table 11). Some ecosystem services are more important at the global level than at the local and national levels, for instance, climate services, while other ecosystem services can be better traded at the local level.

Payment for water-related ecosystem services mainly occurs at the regional/sub-regional level. Many classic examples of arranging payment for water-related ecosystem services, mainly for water purification and waste treatment, are available. Payment for forest-related ecosystem services has been increasingly popular at the national and international levels, with compensation payments made

to land and forest owners in exchange for multiyear contracts for reforestation, sustainable forest management and forest protection as well as climate services. Agri-environmental payments to compensate farmers for forgoing more intensive and more profitable farming practices are mostly found in Europe and North America, and relatively few PES programmes have targeted farmers and agricultural lands in developing countries.

Most cases of payment for ecosystem services start with one services that are valued most highly and needed urgently by major beneficiaries, though the perceived values and urgency of needs may evolve over time and across countries. For instance, the European Community developed price-based incentives as part of agricultural policy to improve environmental quality and biodiversity. Schemes for pollination services and for benign agricultural practices to protect water, soil and biodiversity have been in place for several decades in the United States.

With increasing recognition of other ecosystem services, a new trend has emerged that involves bundling several ecosystem services, mostly by packaging climate services and biodiversity objectives. In the case of Costa Rica, where Pago por Servicios Ambientales was established in 1997, ecosystem services included most in payment schemes so far include: carbon sequestration in biomass or soils; provision of habitat for endangered species; protection of landscapes; various hydrological functions related to the quality, quantity, or timing of freshwater flows from upstream areas to downstream users.

Table 11 Tradability of ecosystem services

Type of ecosystem services	Local tradability	National and regional tradability	Global tradability
Climate services (climate regulation)	Low	Medium	High
Water services (fresh water, water regulation, purification and waste treatment, water cycling)	High	High	Medium
Health services (disease and pest regulation, air quality maintenance)	Medium	High	Medium
Agricultural services (Pollination, photosynthesis, primary production, nutrient cycling, erosion control, soil formation)	High	High	Medium
Disaster prevention services (Natural hazard regulation)	Medium	High	High
Cultural services (Spiritual and religious values, cultural diversity, social relations, and cultural heritage values)	NA	NA	NA
Knowledge services	Medium	High	High

(knowledge systems, educational values, inspiration)			
Tourism services (Aesthetic values, sense of place, recreation and ecotourism, cultural heritage values)	High	High	High

Market approach to payment for ecosystem services

So far, payment for ecosystem services has been driven and dominated by beneficiaries of ecosystem services and their intermediaries, in particular at the regional and global levels. A level playing field for both beneficiaries and sustainers of ecosystem services as well as between beneficiaries has rarely been examined. The heavy reliance on government coffers for payment for ecosystem services will be self-destructive for this new instrument, in particular considering the current fiscal environments in many countries. The scaling-up and sustainability of payment for ecosystem services call for a more mixed approach that can build on the modern market system.

Enabling environments

Payment for ecosystem services has been largely developed on the premise that ecosystem beneficiaries should pay ecosystem service sustainers for the services received. In practice, ecosystem beneficiaries may strive to continue to benefit from free biodiversity and ecosystem services, or find alternative ways to avoid paying the full costs of ecosystem services. National political determination of the entitlements and responsibilities of ecosystem beneficiaries and sustainers is a crucial enabling condition for up-scaling the application of payment for ecosystem services. National legislation and regulations are also important for not awarding illegal squatters, avoiding perverse reward claims and demographic 'magnet' effects. There can also be equity implications if any change needs to be made to the distribution of rights and responsibilities over biodiversity and ecosystem services.

Most transactions on payment for ecosystem services may be governed by existing national rules and institutions, including mechanisms to enforce contracts. Additional national organizations and services may be needed to support monitoring, verification and implementation of relevant rules and conflict resolution. National organizations can be critical in supporting certification schemes when international payment is involved.

In the case of public sector payment for ecosystem services, appropriate attention should be paid to those policies with adverse consequences on biodiversity and ecosystem services, in particular with regard to environmentally harmful subsidies. Without the prior or simultaneous removal or reform of harmful existing policies, payment for ecosystem services may add to incoherent and wasteful policy packages.

Payment for ecosystem services would not likely occur under the following situations:

- Ecosystem uses are sustainable in nature and thus do not constitute a material threat to the interest of beneficiaries of ecosystem services. Such ecosystem services are mostly found in traditional communities which are guided by their traditional knowledge and not yet subject to the invasion of modern technologies. The question is whether these beneficiaries should continue to be free riders morally and financially.
- Ecosystem use changes are nationally and internationally subsidized in a way that the interest of beneficiaries of ecosystem services is adequately covered. In this case, beneficiaries of ecosystem services pay taxes and charges or even voluntary contributions to Governments or third parties, instead of ecosystem service sustainers. For instance, national and international

funds are provided to establishment and maintenance of protected areas that provide desired ecosystem services.

- Net benefits of ecosystem use changes are substantial and not within the range of financial options of the beneficiaries of ecosystem services. For instance, mining of non-living natural resources can not be easily financially counterbalanced by beneficiaries of ecosystem services.
- Beneficiaries of ecosystem services have cheaper alternatives among comparable ecosystem services, even at the expense of quality. In this case, national quality standard of ecosystem goods and services may force beneficiaries to reconsider their options.
- Beneficiaries of ecosystem services have nationally or internationally subsidized cheaper alternatives among comparable ecosystem services. For instance, subsidies are provided to water treatment equipment, rather than to conservation of ecosystem services in the upstream.

Payments for ecosystem services are not primarily a poverty reduction tool, but the poor are likely to be affected and implications for them must be considered. Payments can increase the incomes of the poor who helps sustain biodiversity and ecosystem services. Other poor households may also benefit, for example from increased productivity of the soils they cultivate or improved quality of the water they drink. However, the distribution of benefits depends on who sustains the ecosystem services, and in some cases, payments may also have adverse impacts on poverty and food security, for example if they reduce demand for agricultural employment, increase food prices or exclude the poor from previously common access land areas. Equity should be a main issue to address in designing payment for ecosystem services.

Market creation and support

The current high transaction costs observed in a number of payment for ecosystem services can be partly attributed to the infancy nature of this instrument, but, if the transaction costs do not go down over time, will not be conducive to further development of payment for ecosystem services. One preliminary assessment suggests that transaction costs in forest carbon projects absorb more than 50 percent (and in some cases more than 90 percent) of the value of total payments made, while the forest stewards receives only the residual. More competitive solution, such as a market-oriented approach, needs to be found in order to bring down the high transaction costs.

Market approach to payment for ecosystem services calls for developing markets for ecosystem services. This involves establishing market infrastructure, setting rules and norms for market participants, regulating pricing systems, providing information support and advisory services, market training, and even financial support.

Payment for ecosystem services may be a local, regional or national contractual arrangement without undertaking to secure international support for its positive impact on biodiversity objectives. While benefiting from free-riding on such arrangements, global biodiversity benefits may not be adequately considered, secured and sustained, in particular when there are trade-offs among alternative development strategies. Adequate international funding must be made available to influence the design of payment for ecosystem services and transform the arrangement to support long-term biodiversity objectives. In the case that the available level of payment is not sufficient to cover start-up or operating costs at local or national levels, international funding will play a critical catalytic role in ensuring payment for ecosystem services.

Chapter 9. Financing for climate change and biodiversity

Climate change and loss of biodiversity are increasingly recognized as two major challenges to humanity of the new century. Under the business-as-usual scenario, climate change and loss of biodiversity can be accelerated by reinforcing each other, and lead to considerable decline and degradation of ecosystem services available at global, regional and national levels. If international financial architecture can not be transformed to address biodiversity and climate challenges, climate change and loss of biodiversity will ultimately bring fundamental transformation to current pattern of financial investments.

Funding pattern of climate change and biodiversity

According to the Rio marker statistics accessed in August 2010, official development assistance marked for climate change and biodiversity has increased steadily over the period 1998-2008 (Figures 22-23), except for biodiversity in 2008. Development assistance projects targeted at only climate change jumped from a little bit over US$3 billion over the period 2003-2007 to over US$6.5 billion in 2008, while those targeted at only biodiversity increased, by 128 percent in nominal term, from half a billion US dollars in 2000 to over US$ 2 billion in 2007, but dropped, by over 46 percent in nominal term, to around US$1 billion in 2008. Development assistance projects addressing biodiversity and climate change increased constantly over the period 1998-2008, and up to US$2 billion in 2008. Taken together, marked climate change assistance reached nearly US$ 10 billion in 2008, while marked biodiversity assistance retreated back below the mark of US$3 billion. Climate change emerged as the single important driver for official development assistance marked for the Rio issues in 2008.

Figure 22 Trends in marked development assistance to biodiversity and climate change (USD millions)

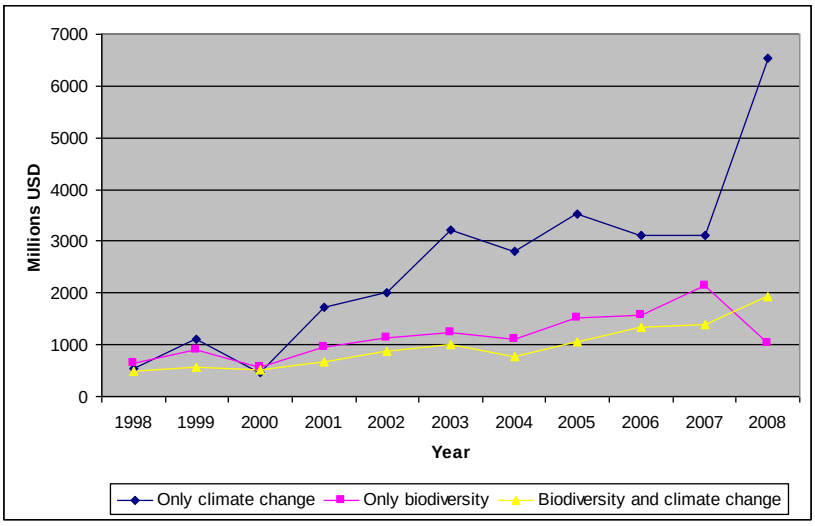
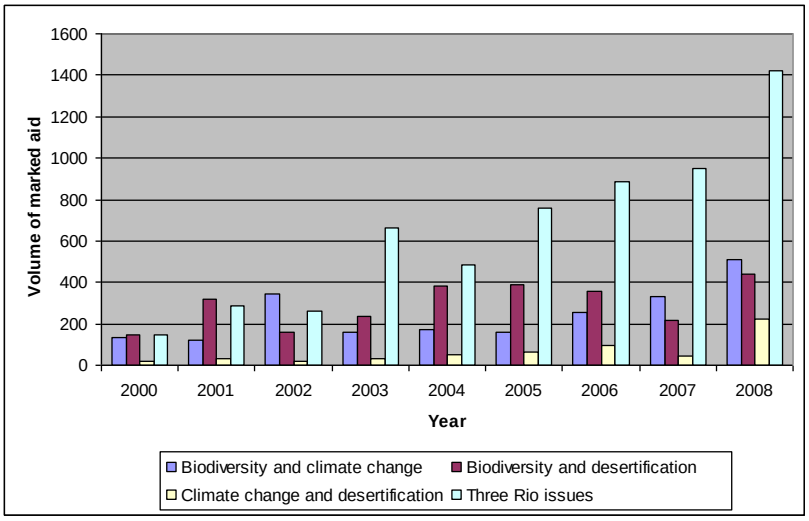


Figure 23 Marked aid to two or three Rio issues



Source: based on OECD Rio Marker database

Development assistance projects increasingly seek to address biodiversity and climate change challenges, and biodiversity and climate change have both benefited from such two-purposed projects particularly during the fluctuating years. But the expected concomitant increase in biodiversity funding as a result of climate funding did not occur in 2008. While the year 2008 saw a sudden drop in projects targeted at only biodiversity but projects marked for climate change increased substantially, projects with primary purpose of biodiversity, which have been marked also to address climate change, went up from US$48 million in 2006 to US$130 million in 2007 and US$261 million in 2008. At the same time, there was no perceptible attendant increase in projects with primary purpose of climate change which can also be marked to address biodiversity.

The assumption that biodiversity can benefit from increasing bilateral investments in the subject area of climate change can be further tested by examining the trends in bilateral assistance to projects which can be marked for both biodiversity and climate objectives. In 2008, marked aid to address both climate change and desertification enjoyed a 400 percent nominal increase from a very low level of the year 2007, which was followed by a 100 percent increase for biodiversity and desertification, 55 percent for biodiversity and climate change, and 49 percent for all the three Rio issues. Marked aid for two or three Rio issues including biodiversity saw an increase of 58 percent in 2008. While this helped to offset the decrease in biodiversity-only bilateral funding in 2008, it did not reverse the overall downward trend in total marked biodiversity assistance.

REDD-plus

The recent Copenhagen Accord refers to scaled up, new and additional funding to enable and support enhanced action on mitigation, including substantial finance to REDD-plus, adaptation, capacity-building, technology development and transfer. The commitment is to provide resources approaching USD 30 billion for the period 2010-2012 (fast-track), and a goal of mobilizing jointly USD 100 billion dollars a year by 2020 to address the needs of developing countries (via public and private, bilateral and multilateral, and alternative sources of finance). “A significant portion of such funding should flow through the Copenhagen Green Climate Fund” to “support projects, programmes, policies and other activities in developing countries related to mitigation including REDD-plus, adaptation, capacity-building, technology development and transfer.”

REDD-Plus (Reducing Emissions from Deforestation and Degradation in developing countries and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks) provides a policy framework to protect threatened ecosystems by generating economic revenue based

on a country's stock of standing forests and its capacity to act as a carbon sink. The quantities of carbon stored can result in tradable carbon credits sold via the voluntary market or potentially under the regulatory market in the post-2012 climate regime. The role of tropical deforestation and forest degradation, which account for 20 percent of global CO2 emissions has been widely recognized as a critical aspect of mitigating climate change.

In developed countries, national legislation that allows for one-third of offsets to be met by carbon projects would provide incentives for corporations to invest in REDD-Plus. The Waxman-Markey Bill of the United States that creates market based incentives for private sector investments in forest carbon could provide insights.

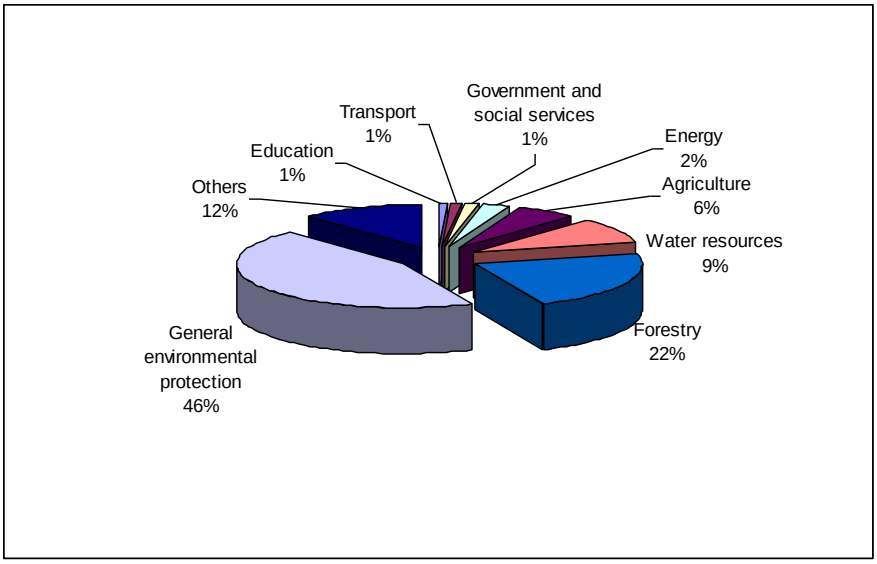
If REDD-plus climate change finance can flow (i.e., measurable, reportable and verifiable of support) to where biodiversity benefits are being delivered (monitoring, reporting and verification of biodiversity benefits), biodiversity finance could then be re-channelled and targeted to geographical areas with high biodiversity - low carbon benefits, thus maximising environmentally cost-effective outcomes.

Mobilizing climate resources

The Conference of the Parties to the Convention on Biological Diversity has integrated climate change into all its programmes of work, with the exception of the programme of work on technology transfer, and adopted a series of decisions on climate change and biodiversity. However, a review of 152 national biodiversity strategy and action plans reveals that only a small minority contain specific objectives or actions to link biodiversity and climate change. Eleven Parties (Barbados, Cambodia, Czech Republic, Dominica, European Community, Finland, Germany, Japan, Namibia, Peru, and South Africa) address biodiversity and climate change as a strategic objective with related actions. Five Parties (Canada, Nigeria, Portugal, Slovakia, and Sweden) address biodiversity and climate change as a strategic objective but have not developed related actions. Twelve Parties (Belgium, Brazil, Chile, Cuba, Guatemala, Lithuania, Micronesia, Spain, Tajikistan, United Kingdom, Venezuela, and Yemen) have developed actions to address biodiversity and climate change under strategic objectives dealing with research, monitoring, protected areas, forests, energy and transport sector, and carbon sequestration capacity.

Among 7590 development assistance projects marked for both biodiversity and climate change, which amounts to US$5.4 billion over the period 1995-2008, the largest contribution category is general environmental protection, which contributed 45 percent. The other most important categories include forestry (22%), water resources (9%), agriculture (6%) and energy (2%). Government and social services, transport and education also have certain share of contribution (Figure 24). Other sectors include banking and financial services, emergency response and disaster relief, fishing, health, industry, trade policies and regulations, communications, tourism, mineral resources and mining. This empirical analysis points to a focus for mobilizing sectoral climate resources, i.e., general environmental protection, forestry, water resources, agriculture and energy.

Figure 24 Composition of 7590 projects marked for both biodiversity and climate change



Source: based on OECD Rio Marker database

Investments in ecological infrastructure, especially improvements in agricultural productivity, fresh - water supply, and natural hazard management should be included in projects that can be funded from any climate adaptation fund. Each country can take action by investing in ecosystems as support for adaptation. In many cases, these approaches will be found to be more cost-effective than technological solutions using built infrastructure. Sustainable agriculture is another area that is likely to provide strong synergies between climate change and biodiversity. Further work is needed in this area to identify linkages, opportunities, and how appropriate policies and incentives can be designed at the national and international level to capture the benefits.

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Chapter 10. Outlook – Back to 2020

Needs identification and determination

Table 12 provides several assessments of biodiversity funding needs available from the intergovernmental processes as well as in the academia. Although none of these assessments were used in informing relevant negotiations for any substantial official decisions under the Convention, some of them have been frequently cited in raising awareness to funding gaps. The scope of these assessments is generally limited to conservation or even protected areas, while the Convention has broader mandates. The reference timeframe is not specific. The range of the estimated results is too wide, and thus does not provide a sense of approximation. The assessment procedures and methodologies are generally not available.

The United Nations Conference on Environment and Development (UNCED) (3-14 June 1992, Rio de Janeiro, Brazil) attempted to estimate costs of implementing the biodiversity chapter of Agenda 21. It started with compiling a compendium of existing estimates of the global costs of conserving biological diversity, involving research with an extensive network of contacts within and outside the United Nations system and studies of information available in published documents such as the WRI/IUCN/UNEP "Global Biodiversity Strategy", the IUCN/UNEP/WWF publication "Caring for the Earth" and in the country studies guidelines published by UNEP. Using existing literature, the UNCED secretariat established an indicative global estimate, and sought the advice of its ad hoc expert working party on biodiversity to provide an estimated cost of implementing each activity under the four programme areas of the relevant draft chapter of Agenda 21. During its fourth session, the UNCED Preparatory Committee decided to consolidate the four programme areas of the draft biodiversity chapter into one and to omit or amalgamate some activities. The total costs were revised by reference to the costs of the activities excluded or amalgamated. That assessment assumed that only 100 developing countries required international financing, and suggested that actual costs and financial terms, including any that are non-concessional, depend upon, inter alia, the specific strategies and programmes Governments decided upon for implementation.

Many recent estimates of funding needs are based on the information of a World Conservation Monitoring Centre survey conducted in the late 1990s. The survey obtained protected areas expenditures in 108 countries that manage 3.7 million square kilometres, or more than 28% of the global protected areas system, as well as estimates of funding shortfalls from protected areas managers in 52 developing countries and 14 developed countries. The empirical information has been used as the basis to extrapolate regional and global estimates, and some studies further developed funding needs under various targeted scenarios, but it does not provide support for estimating the costs of sustainable use and access and benefit sharing. A recent study examined adaptation options on natural ecosystems, and found that the cost of halting biodiversity loss due to climate change can go up to US$350 billion - 400 billion.

Table 12 Estimation of funding needs for biodiversity

Source	Focus	Estimates (US$ per annum)
UNDP/WRI (1989)	Conservation	$20-$50 billion
World Bank (1991)	Cost of biodiversity conservation	500 million - $50 billion
UNEP (1992)	Global current cost of conservation	Mean $ 20 billion

UNCED (1992)	Average total cost (1993-2000) of selected biodiversity activities	$3.5 billion
James *et al* (2001)	Protected areas	$18 - $27.5 billion
Balmford *et al* (2002)	Terrestrial protected areas and 15% expansion, plus marine protected areas	$43 - $51 billion ($49 - $57 billion for first 30 years)
IUCN (2003)	Protected areas	$20-$30 billion
Bruner *et al* (2003)	Funding gap for protected areas	$25 billion
Berry (2007)	Adaptation of natural ecosystems (protected areas and conservation in a wider landscape, plus marine protected areas)	$355 - $384.5 billion

Needs identification and determination must be related to specific targets the global community desires to achieve within stated time framework. One quantitative target could be the percentage of species being threatened. With the expansion of the taxonomic coverage of the IUCN Red List, for instance, from 16,506 in 2000 to 44,838 in 2008 and 47,677 in 2009, the absolute number of species being threatened has also increased. However, the number of species being considered threatened in relation to the number of species assessed has decreased considerably, from 69% in 2000 to 38% in 2008 and (17,291) 36% in 2009. The percentage of species being threatened in species additionally assessed is relatively stable in the past decade (Table 13). Further research should be carried out on how much funds would be needed in order to reduce the percentage of species threatened in species assessed, say from currently 38% to 20% by 2020.

Table 13 Species assessed over time

Year	2000	2004	2008	Change between 2000 and 2004	Change between 2004 and 2008
Species assessed	16507	38047	44838	21540	6791
Species threatened	11406	15589	16928	4183	1339
Percentage of species being threatened	69%	41%	38%	19%	20%

Source: Vié, J.-C., Hilton-Taylor, C. and Stuart, S.N. (eds.) (2009)

Bridging the knowledge divide

The information regarding economic values of biodiversity and ecosystem services is often an entry point for financial consideration. To facilitate resource mobilization at all levels, economic values of biodiversity and ecosystem services need to be assessed not only at the global level, but more importantly at the national and regional levels, and not only by the developed world, but more importantly in the developing world.

Economic assessments of biodiversity and ecosystem services are still rare in developing countries, and a few available studies are focused on potential economic loss associated with ecosystem changes, not on potential economic benefits. In the Asia and Pacific region, estimates of economic

costs of environmental degradation range from 1-9 percent of a country's gross national product (GNP), depending on the country and the impacts included in the estimates. For China, estimated productivity losses caused by soil erosion, deforestation, and land degradation; water shortage; and destruction of wetlands amounted to between $13.9 billion and $26.6 billion, equivalent to 3.8 to 7.3 percent of its 1990 gross national products. In Pakistan, the health impacts of air and water pollution and productivity losses from deforestation and soil erosion were estimated at $1.71 billion, or 3.3 percent of gross national products, in the early 1990s. In Mexico, the National Institute of Statistics and Geography developed an indicator of Ecological Gross Domestic Product to attribute an economic value to environmental heritage loss. Ecological Gross Domestic Product represented 89% and 91% of GDP in 1999 and in 2006 respectively, signifying that the cost of environmental depletion and degradation in Mexico fell slightly as a proportion of GDP from 10.9% in 1999 to 8.8% in 2006. The Global Mechanism of the United Nations Convention to Combat Desertification estimated that the costs of desertification vary between 3% and 7% of gross agricultural product in a case study of Chile and Mexico.

Mixture of resource mobilization tools

National biodiversity strategies and action plans can be of no value if their objectives are not concertedly supported by lasting financial support of projects since national biodiversity strategies and action plans have a horizon of ten to twenty years on average. Biodiversity is still a relatively new area for traditional sources of funding that have a focus on development and poverty eradication. Budget deficits, competing priorities, returns to biodiversity investments, and growing public expectations, all point to the need for new strategies of biodiversity finance. A clear and coherent financial strategy would be a powerful instrument when dealing with the deployment of funds coming from different sources, and thus assuring the logic of allowing additional funding. A strategy for financing taking into account local, national and international contexts would reap substantial benefit and allow the participation of important players who were ignored in the past for environmental projects, such as the private sector.

Australia provides the best example in this regard. Caring for our Country is an Australian Government initiative that seeks to achieve an environment that is healthy, better protected, well managed and resilient, and provides essential ecosystem services in a changing climate. The biannual business plan sets out the targets for investment in two years and following years to ensure achieving the government's five-year Caring for our Country outcomes. The business plan provides guidance to potential applicants on the types of proposals which the Australian Government is seeking to fund to address these targets. The structure of Australia's business plan 2010-11 includes: Caring for our Country overview; Aim of the 2010-11 business plan; Budget; How we will invest – different approaches; Building partnerships; Priorities for investment; Funding information; Monitoring, evaluation, reporting and improvement.

Integration strategies and funds

While national biodiversity strategies and action plans are a useful first step in mobilizing biodiversity actions, the ultimate achievement of the Convention's three fold objectives will depend on the extent to which sectoral integration of biodiversity objectives can be realized. Strategies and funds to integrate biodiversity objectives and sectoral development goals nationally and globally will be key to reconciling financial interests of biodiversity and sectoral activities. Essential elements for effective integration strategies include: establishing the institutional mechanism; defining the strategic framework; identifying sectoral policies; assessing the negative impacts; defining potential positive contributions to attaining national development goals; and identifying policy options and action areas.

Integration strategies can contribute to the development of a green economy, which, as defined by South Africa, is a system of economic activities related to the production, distribution and consumption of goods and services that result in improved human well-being over the long term,

while not exposing future generations to significant environmental risks or ecological scarcities. Green economy is characterized by a higher share of green sectors in the economy, more green and decent jobs, more green growth, more green trade, more green consumption pattern, reduced energy and material intensities in production processes, less waste and pollution, and significantly reduced greenhouse-gas emissions. Key sectors with potential to drive a green economy may include: agriculture, green buildings, greener transport including electric vehicles & bus rapid transit, green cities and towns, forests, energy supply including grid-connected solar, thermal, and large wind power projects; energy efficiency including demand-side management, water, fisheries, industry and manufacturing, tourism, waste management, retail, natural resources as well as consultancy, policy, research and governance. Green economy calls for substantially increasing investment in green sectors, supported by enabling policy reforms, and advocates the green infrastructure approach as a framework the multifunctional benefits of the totality of the environment and its supporting natural processes.

Access and benefit sharing instruments

Market for genetic resources seeks to capitalize on the commercial value of genetic and biochemical resources, particularly in the pharmaceutical, biotechnological and agricultural industries. Similar to mineral exploration, the exploration of commercial use of valuable genetic material is called biodiversity prospecting or bioprospecting. The practice of bioprospecting exists for many years, in particular for agricultural plant breeding. In parallel with recent advances in molecular biology and increasing availability of sophisticated diagnostic tools for screening biological specimens, the scarcity of genetic resources has increased considerably as species and their associated ecosystems are rapidly disappearing. In the middle 1980s, pharmaceutical industry analysts warned that each medicinal plant lost in the tropical rainforests could lose drug firms possible sales of more than US$200 million.

The transparency, legal certainty and predictability of access and benefit sharing instruments in support of biodiversity objectives have not been fully elaborated. The National Biodiversity Institute (INBio) of Costa Rica has managed to raise approximately USD 4.2 million annually from grants and contracts with research institutions and companies, of which 10% is donated to Costa Rica's Ministry of Energy and Environment for direct biodiversity conservation. Other examples have shown a wide range of access and benefit sharing mechanisms, ranging from monetary benefits such as up-front payments, milestone payments and royalties, to full cooperation in scientific research and technology development, as well as trust funds, joint ventures and licenses with preferential terms. If 25-50% of pharmaceutical products are derived from genetic resources as demonstrated by some studies, the global market for pharmaceutical products, which is worth around USD 640 billion in 2006, should hold enormous resourcing potentials.

Tapping venture capitals and financial market by reforming the micro-foundation

Financial viability of biodiversity objectives will be reflected in the ability to raise funds at financial markets. To access financial markets, biodiversity objectives must be incorporated, like utility companies, into modern corporation system that will capture the values of biodiversity and ecosystem services at the micro-ecosystem level, reward the performance of managing biodiversity and associated ecosystem services using both traditional wisdom and modern techniques, and provide an institutionalized incentive to sustain biodiversity and ecosystem services in a way that is expected by its donors and other stakeholders. Business revenues and employment to local population of such corporations may be from protecting and managing biodiversity, provisions of ecosystem services, sustainable tourism, sustainable agriculture, sustainable fisheries, sustainable forestry, bioprospecting, and offsetting activities.

If biodiversity corporations are basic biodiversity units that manage human activities within clearly defined ecosystems where biodiversity values are significant, the whole biodiversity governance

system can be restructured on the basis of new micro-foundation. Instead of directly carrying out most operational functions of biodiversity management, Governments can redefine its role by specializing more on developing policy guidance, providing strategic financial support, monitoring and policing the performance of biodiversity corporations.

Biodiversity corporations provide a new avenue of reconciling different interests in biodiversity management. Stakeholders and traditional ecosystem stewards can be effectively transformed into shareholders or stockholders of modern corporations that take care of biodiversity and ensure the provision of ecosystem services. Their interests, concerns or potential conflicts will be addressed through the operation of commonly owned corporations. The status and trends of their biodiversity and ecosystem services will have direct impacts on their income and employment opportunities. If the stocks of these corporations are traded in the financial market, the status and trends of local biodiversity and ecosystem services will be further watched and examined not only by public sector analysts but also by private sector analysts.

In addition to the role of providing policy service, national governments, international organizations and interested private sector investors will have new tools to influence local biodiversity and ecosystem management, for instance,

(i) Taking seats on the board of directors, which provides supervisions of biodiversity operations;

(ii) Training the executive board as trainers for channelling biodiversity awareness, knowledge and know-how to larger local human population who are mostly shareholders as well as employees of corporations;

(iii) Providing international expertise in the executive board;

(iv) Regulating monitoring and analytic system for assessing the status of and trends in biodiversity within defined ecosystems as well as management performance;

(v) Directly or indirectly participating in the financial market for biodiversity;

(vi) Undertaking favourable environmental fiscal reforms, such as providing tax exemptions, in favour of these corporations;

(vii) Adopting green procurement procedures with preferred consideration to these corporations, etc.

Innovation and governance

So far, international cooperation on biodiversity has been based on the spirit of solidarity between developed and developing countries. The transfer of resources, in the form of official development assistance, is very much similar to direct income taxes at the national level, in the sense that the richer countries are expected to provide more resources and the less fortunate countries are thus assisted. While effective for equity purposes, direct taxes are normally not effective in encouraging or discouraging certain economic and consumptive activities.

At the national level, indirect taxes are used to relate economic and consumptive activities to specific social and revenue objectives. For instance, tax on tobacco has proved to be more effective in achieving health objectives while raising additional revenues. Regardless of the level of income, producers and consumers of tobacco generally face high tariffs, and the only way to avoid this tax is to quit smoke. Similarly, innovative financial mechanisms, such as payment for ecosystem services and biodiversity offsetting mechanisms, are built upon the fact that biodiversity and ecosystem services provide benefits to humanity and are adversely impacted by selected human activities.

The governance challenge for a meaningful global system of payment for ecosystem services and biodiversity offsetting mechanisms is that the current governance structure for international

cooperation was designed to reflect the dichotomy between developed and developing countries, with different voices, participation and privileges for various countries. The current system was not designed with a purpose to influence the sustainability-unsustainability divide, which can empower the forces of sustainability and generate new resources for biodiversity objectives and address unsustainability challenges.

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