Investing in Biodiversity Conservation

Proceedings of a Workshop

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This paper was edited by Gil Nolet of the Inter-American Development Bank and Santiago Carrizosa of the University of Arizona. Walter Arensberg, Chief of the Environment Division of the IDB moderated the workshop and Kari Keipi, Senior Forester and Natural Resource Specialist in the Bank's Environment Division was responsible for overall coordination. Collaborators included: Eduardo Villaseñor (DPA/DEV), María Antola and Ana María Dalton. Gratitude also goes to the working group moderators: Raul Tuazon (Region 1), Ricardo Quiroga (Region 2) and Helena Landazuri (Region 3). Great appreciation is expressed to the workshop speakers and other participants . Much of the workshop's success was due to their varied perspectives and experiences. They also provided timely presentations and lively discussion throughout the meeting. The opinions and recommendations included in this report are those of the authors and participants. They do not necessarily represent the official position of the Inter-American Development Bank.

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Executive Summary

This document presents the proceedings of a one-day Workshop on Investing in Biodiversity Conservation held at the Inter-American Development Bank in Washington, D.C., on October 28, 1996.

The purpose of the workshop was to assess the comparative advantage of the IDB in financing biodiversity conservation and to analyze the cross-sectoral role of biodiversity conservation. The first part of the workshop was dedicated to the presentation of key topics on biodiversity financing by five leaders in the field. The papers are reprinted in their entirety in this document.

The second part of the workshop was dedicated to a discussion and exchange of ideas on the role of the IDB in investing in biodiversity conservation. During the discussions, the participants agreed that the Bank, for several reasons, is uniquely positioned to play a significant role in biodiversity conservation in Latin America and the Caribbean. Although the IDB has only limited experience with stand-alone biodiversity projects, it has extensive experience on the incorporation of biodiversity considerations in investment projects.

During the discussion of new approaches to investing in biodiversity conservation, the participants acknowledged that the main problem in financing biodiversity conservation is identifying cost-effective cofinancing approaches with consumers and governments. Achieving financial sustainability in biodiversity conservation was also an important topic discussed at the meeting. There was a consensus about the importance of changing remaining government subsidy policies in productive sectors that may distort the economy and have a negative impact on biodiversity conservation.

The participants made several specific suggestions on possible approaches to investing in biodiversity conservation. It was recommended that biodiversity concerns be mainstreamed into the IDB's regular development operations. Participants suggested that Bank staff should be encouraged to work on innovative biodiversity components as well as small independent projects, driven by the needs of the borrowing countries. Experience shows that these approaches may be more successful than the traditional large and complicated programs. All participants agreed that public participation and the involvement of the affected population are essential to the success of biodiversity conservation investments.

Workshop participants suggested several specific courses of action to modify existing IDB policy and procedures to overcome existing constraints to financing biodiversity conservation. Three main recommendations emerged:

(i) the Bank should prepare a report on its experience in biodiversity projects and development programs with biodiversity components;

(ii) a task force should be formed to work on a biodiversity policy or strategy; and

(iii) IDB staff should be trained to understand the biodiversity concept and its implications in project preparation and implementation.

Finally, participants stressed the importance of continued IDB support to national environmental funds, which are promising instruments for financing biodiversity conservation. They also suggested that the IDB should explore other innovative instruments, such as bioprospecting, joint implementation projects and commercial enterprise funds.

Workshop on Investing in Biodiversity Conservation

Introduction

The diversity of genes, species and ecosystems found in Latin America and the Caribbean is of great value to the inhabitants of the region as well as the rest of the world. Biological diversity is the basis for ecological relations that result in the balance of regional ecosystems and affect the world's climate. It is difficult to quantify the economic, social and cultural benefits of genes, species and ecosystems. Biodiversity is valued not only for its intrinsic, scenic, social and cultural values, but also for its contribution to the economy through medicine, agriculture, fisheries and forestry products. However, continued loss of biological diversity increasingly threatens the conservation of these values. Given current rates of deforestation, 15% of the plant species and 12% of the bird species indigenous to the Amazon rain forest will disappear between the years 1986 and 2000.[1] If deforestation were to continue until all forests disappear (excluding protected areas), two thirds of all plant and bird species would become extinct.[2]

Concern about the loss of biodiversity has resulted in an increase in international financial support for conservation programs in developing countries with rich biological resources which lack the technical expertise to manage these resources. Support has come from a variety of sources, such as governments, the private sector, international and local NGOs, and international organizations. The Global Environment Facility (GEF) serves, among other things, as the interim financial mechanism of the Convention on Biological Diversity (CBD). Since its establishment in 1991, the GEF has approved approximately US$450 million for biodiversity projects through its three implementing agencies (UNDP, UNEP and the World Bank). The GEF plans to approve an additional US$250 million per year for the coming years (GEF 1996).[3]

During the last six years, the Inter-American Development Bank (IDB) has provided approximately US$5.6 billion in financing for environmental projects in Latin American and the Caribbean. Since biodiversity components are integrated into several other project components (in environmental projects and regular investment projects), it is difficult to identify the exact amount of biodiversity financing approved by the IDB. The amount annually dedicated to biodiversity conservation in the region is even more difficult to assess, as most projects are developed over several years. Annual disbursements are often subject to several factors and may correspond to local counterpart funding, which should also be taken into consideration.

Despite the increase in international support, it is widely acknowledged that investment in conserving

[1] Simberloff,D. 1986. *Are We on the Verge of a Mass Extinction in Tropical Rain Forest?* In D.K. Elliot (ed.), Dynamics of Extinction. Wiley. New York.

[2] Primack, R.B. 1993. *Essentials of Conservation Biology*. Sinnauer Associates, Inc. Massachusetts.

[3] A recent review of World Bank projects with biodiversity conservation objectives and components found that they are rarely stand-alone operations. Typically, biodiversity components are contained within broader natural resource management or environmental institution building projects. The cumulative financing from 1988 to 1995 for those projects is US$1.3 billion of which approximately half consist of IBRD and IDA loans (US$525 million) with the rest coming from grants from GEF ($182 million) and other donors and governments ($548 million). The regional breakdown of these projects reflects the concern for megadiversity in tropical countries, including Brazil, Mexico and Venezuela from the LAC-region and Kenya and Madagascar in Africa. (World Bank, Mainstreaming the Environment, 1995)

biodiversity is insufficient, and that innovative approaches are required for generating additional financial support. More funds may be required to support national conservation efforts and opportunities for innovative sources of funding should be explored. However, concessional resources, such as from the Global Environment Facility and bilateral donors, are increasingly scarce. In this context, regional organizations, such as the Inter-American Development Bank, may have a greater role to play in supporting their member countries' future efforts to conserve biodiversity.

Mandate of the Inter-American Development Bank

Over the last several years, the IDB's member countries have shown great interest in conservation and sustainable use of biodiversity. Most of the countries have signed and ratified the Convention on Biological Diversity. In addition to the conservation of biological diversity, the CBD's objectives include the sustainable use of these resources and the fair and equitable sharing of the benefits derived from their use. The IDB assists the member countries in complying with the Convention and is committed to make its activities supportive of the agreement. The Report on the Eighth General Increase in Financial Resources (1994) provides the IDB with a clear mandate and commits it to an ongoing search for opportunities to aid in the conservation of biological diversity. The document also acknowledges the common but differentiated responsibilities of countries and states that "account must be taken of the significant economic costs developing countries must bear in shifting toward the goal of sustainable development. Therefore, solutions to environmental problems, especially global problems, must take imaginative approaches and must envision the availability of financing on concessional terms for environmental projects and components with distinctly global benefits including, for example, projects related to the implementation of the Biodiversity and Climate Change Conventions."

Purpose and Participants

To initiate a discussion on the role of the IDB in financing the conservation of biodiversity, the Environment Division (ENV) of the Bank's Social Programs and Sustainable Development Department organized a Workshop on Investing in Biodiversity Conservation, held at IDB Headquarters in Washington, D. C. on October 28, 1996.

The purpose of the workshop was to assess the comparative advantage of the IDB in financing biodiversity conservation and to analyze the cross-sectoral role of biodiversity conservation. The workshop also offered an opportunity to discuss innovative financing mechanisms and possible modifications in IDB policy and procedures to overcome existing constraints in financing biodiversity conservation. Achieving financial sustainability in biodiversity conservation was another important topic analyzed during the meeting.

The workshop was attended by 51 participants, including 18 representatives from nongovernmental organizations and universities, and six from international organizations such as the World Bank, the International Finance Corporation, the United Nations Development Program, and the Global Environment Facility. Twenty-seven IDB staff members, from Headquarters and Country Offices, also attended.

Inauguration

After the workshop was inaugurated by Walter Arensberg (Chief ENV), Yolanda Kakabadse (the newly elected President of IUCN) delivered a short introduction in which she stressed the importance of information sharing between governments, non-governmental organizations, grassroots organizations and indigenous groups on biodiversity in general and the Convention on Biological Diversity in particular. She stated that increased knowledge about the convention and its benefits would contribute significantly to the success of its implementation. She also noted that IUCN would continue to work to improve collaboration among the various sectors of

civil society, building upon the existing capacity and knowledge in many of these sectors.

Presentation of Papers

Five leaders in the field presented papers that were commissioned for the Workshop. This section includes a summary of the five presentations. Papers were provided by Jeffrey A. McNeely from the World Conservation Union, Douglas Southgate (Ohio State University), David Smith (Jamaica Conservation and Development Trust), and Marc J. Dourojeanni (IDB/Brazil). Ken Newcombe's (World Bank) presentation is transcribed from the workshop recording and edited for its reproduction in these proceedings. The unabridged version of the papers is reprinted in this report.

In his presentation entitled *Achieving Financial Sustainability in Biodiversity Conservation Programs,* Jeffrey McNeely analyzed potential sources of funding for the conservation and sustainable use of biodiversity, such as joint implementation, international taxation, tradable permits, transfer of development rights and credits, and debt-for-nature swaps. In analyzing these sources of funding, McNeely distinguished between six principal investors (international agencies, the private sector, governments, international and local NGOs) and assessed the tools and mechanisms that each source may initiate or support. McNeely also stressed several policy changes that need to be implemented to facilitate the use of new sources of funding and proposed several specific courses of action for the IDB.

Douglas Southgate presented the key findings of a forthcoming paper entitled *Alternatives for Habitat Protection and Rural Income Generation*, which examines the potential benefits of ecotourism, non-timber extraction, sustainable timber harvesting and genetic prospecting to rural communities. Dr. Southgate concluded that these activities, under the right circumstances, can contribute to biodiversity conservation and improved living standards in selected areas. In and of themselves, however, they cannot serve as a sound centerpiece for an integrated economic development and habitat conservation strategy. Southgate argued that intensification of agriculture and human capital development may be more fundamental, indirect solutions to habitat conservation. Since the early sixties the larger part of increases in crop and livestock production throughout the world has resulted from intensification. It has been shown that Latin American countries with high crop yields have a low frontier expansion. In contrast, countries that have not made investments in intensification have a high rate of deforestation.

In his presentation entitled *Private Sector Investment in Biodiversity Conservation,* David Smith reviewed successful strategies that have been implemented jointly by the private commercial sector and NGOs to promote the conservation and sustainable use of biological diversity. These partnerships are increasing around the world and provide incentives and benefits to biodiversity conservation through the implementation of ecotourism initiatives, marine parks, biodiversity prospecting, debt-for-nature swaps and establishment of trust funds.

In his paper entitled *Public Sector Roles and Economic Policies Affecting Biodiversity Conservation in Latin America and the Caribbean*, Marc J. Dourojeanni provided a review of economic policies, legislation, planning, and institutional practices that have played a significant role in biodiversity conservation in Latin America and the Caribbean. Mr. Dourojeanni gave several examples of successful cases of public action for biodiversity conservation in the region. He mentioned, for instance, the Green Protocol in Brazil under which federal banks have decided to establish environmental procedures and require their clients to comply with domestic environmental legislation. Other successful examples of biodiversity conservation are debt-for-nature swaps, land taxation benefits for private natural reserves, and the Colombian property tax used for environmental investments.

Ken Newcombe's presentation, entitled *Comparative Advantages and Limitations of the IDB in*

Financing Conservation for Biodiversity, provided an overview of the possible role of the IDB in biodiversity conservation. Mr. Newcombe emphasized that biodiversity is a concept that embodies multiple commercial opportunities in Latin America. Therefore, biodiversity should be a primary component of any strategy of sustainable development. In this context, the IDB should work more on understanding the relationship between biodiversity and poverty alleviation, and empower public and private organizations with experience in the biodiversity business. In Latin America, multinational companies and NGOs are developing biodiversity-related enterprises to capitalize on the economic value of biodiversity in terms of sustainable agriculture, forestry and fishery initiatives. Newcombe stressed that the IDB can assist these organizations with financial resources, technical assistance and know-how.

Workshop Objectives and Findings

This section describes the main findings and recommendations that came out of the workshop following discussion in its plenary sessions and in the three working groups. The discussion focused on three main issues: the comparative advantage of the IDB and its experience in biodiversity financing; innovative financing mechanisms; and possible modifications in IDB policy and procedures to overcome existing constraints in biodiversity financing. The participants discussed the role of the private sector in biodiversity financing and the challenges and opportunities of the economic liberalization process in the region. The potential gains arising from changes in government policy on property rights and the opportunities of privatization for new forms of raising revenues were also analyzed. Another issue discussed was the potential of trust funds as a source of financing conservation. Further, the importance of understanding the economic potential of biodiversity and promoting sound investments was discussed. The participants stressed the importance of public participation and involvement of the local population. They underlined that biodiversity programs with very concrete, local actions have a better chance of success than traditionally large and centralized public sector investment operations. Finally, the participants highlighted the importance of education and human capital formation in biodiversity conservation.

Comparative Advantages of the IDB and Its Experience in Biodiversity Financing.

According to the workshop participants, the main comparative advantage of the IDB is its regional character which provides it with knowledge and expertise unique to Latin America and the Caribbean. This is reinforced by its organizational structure with country offices located in all borrowing member countries. The fact that the borrowing member countries have a majority ownership of the Bank, makes the IDB a natural partner in the development process. It also affords it a high level of credibility and leverage which has resulted in a strong presence in the region. The IDB's clear mandate on biodiversity conservation, is also due to the interest of nonborrowing member countries which are very supportive of biodiversity conservation programs. The IDB is a relatively transparent organization, particularly in light of its new policy on disclosure of information. It is actively working with the countries to strengthen public participation procedures.

During the last several years, the Bank has used its leverage effectively to introduce environmental conditions in its operations which, among other things, has resulted in the incorporation of biodiversity concerns in public and, more recently, private investments through financial intermediaries. The experience of the Bank with stand alone biodiversity operations is limited. Governments seem reluctant to request nonconcessional resources for biodiversity programs. The Bank should do a better job in conveying to the countries the importance of biodiversity and the benefits of conservation investments. Workshop participants proposed that more could be done on the inclusion of biodiversity considerations in the individual IDB country programs which are discussed periodically with the national governments. Specifically, it was suggested

that the participation of environmental specialists in the Bank's programming missions would facilitate the integration of biodiversity operations in country programming papers.

Experiences with investments in biodiversity conservation show that programs with concrete, often local or regional, actions that include the participation of local populations and interested NGOs, have a better chance of success than large investment operations. The Bank's incentive structure for its staff, however, favors the approval of relatively large investment operations. Also, traditional Bank members are central governments. The Bank is aware of these potential shortcomings and is currently undergoing a process of change, working more with local governments and with representatives of civil society. The IDB has worked jointly with governmental and nongovernmental organizations in the case of the establishment of national environmental funds where the IDB has supported NGO representation on the boards of public funds.

Effective Approaches to Investing in Biodiversity Conservation.

Workshop participants noted that more funds are required for supporting government efforts to implement the Convention on Biological Diversity. They also noted that the main problem in financing biodiversity conservation is not just finding additional sources of financing but identifying cost-effective financial instruments. Participants discussed several opportunities for the development of innovative sources of funding, as well as the kinds of policy reforms required to enable these sources to be effectively applied to biodiversity problems. The major recommendations are listed below.

Mainstream Biodiversity Concerns into the Bank's Regular Development Operations. Participants emphasized that development projects should be assessed at an ecosystem and regional level in addition to a sectoral or location specific scale. Agricultural programs, for example, affect not only the land devoted to agricultural production but entire ecosystems. Mainstreaming biodiversity concerns into development projects could be achieved by promoting the creation of incentives for conservation of biodiversity and sustainable use of biological resources, such as property rights regimes and markets for "green" products. As part of the mainstreaming of biodiversity in investment operations, the Bank should encourage resource mobilization and leverage of additional resources to complement its loans and define plans to ensure financial sustainability especially in the ex-post phase of conservation programs.

Develop and Apply New Approaches to Financing Conservation of Biodiversity. Participants noted that National Environmental Funds, which exist in more than 20 countries in the region, are promising instruments for financing biodiversity conservation. They stressed the importance of trust funds in providing access to capital for grassroots proposals that otherwise might be undervalued in a political and economic sense. It was also noted by some participants, however, that trust funds may be financially inefficient and that governments should be encouraged to allocate sufficient fiscal resources for biodiversity conservation. Several participants also suggested that the Bank promote the establishment of positive incentives, such as taxation, entrance fees, royalties, property rights with tradable quotas, development rights, various kinds of leases and licenses, and bonds.

Ensure Public Participation and Involvement of the Local Population. All participants agreed that public participation and involvement of the affected population are essential components of biodiversity conservation programs and contribute to their success. One way of achieving greater involvement is through broad participation from relevant stakeholders in the preparation of conservation programs, such as protected areas management, as well as including them in the management and monitoring activities of such programs.

Removal of Perverse Incentives. A consensus emerged among the participants about the

importance of removing or phasing out costly subsidies and other expenditures that distort the economy and have a negative impact on biodiversity conservation. Approximately one trillion dollars are currently being spent worldwide in direct and indirect subsidies of energy, water, agrochemicals, marginal agriculture, deforestation, and heavily polluting industries that lead to loss of biodiversity far beyond what would be happening without such subsidies.

Promote the Availability of Concesssional Resources. Some participants argued that private and local investments in biodiversity conservation are, by their very nature, insufficient because biodiversity is a public good. A rational person in a developing country may find it in his or her best interest to destroy biodiversity because the commercial benefits derived from it may be very small when compared to alternative land uses. The primary benefits of biodiversity are global by nature. From an equity point of view this implies that everyone should pay for biodiversity. Participants recommended that the IDB should make concessional resources available for biodiversity projects. Some participants suggested that the IDB establish a Biodiversity Fund financed with either its own limited concessional resources or through voluntary contributions from interested member countries. Alternatively, the IDB could assist its borrowing member countries to establish national funds with resources from revenues generated through privatization.

Use of Joint Implementation Projects. Participants suggested that while joint implementation is designed to help implement the Climate Change Convention, well-designed projects can provide significant benefits to biodiversity. Some participants argued that joint implementation schemes were unlikely to draw sufficient investor interest because there are no tangible benefits from buying carbon credits. Thus, countries may lose interest in exploring joint implementation programs. This has been the case in Costa Rica which is currently unable to attract investors.

Bioprospecting Activities. Bioprospecting activities may provide incentives to conserve biodiversity such as through capacity building and technology transfer. Participants noted that if the Bank becomes involved in bioprospecting, it needs to establish sound procedures to ensure that people with access to the resources are involved in the activities and that they have the necessary knowledge needed to manage them. Arrangements for benefit sharing should be established. There was no consensus on the potential of bioprospecting to provide significant benefits to local communities. The discussion also turned to the possibility of obtaining higher royalties for the host countries, such as through the establishment of cartel rights among these countries.

Commercial Investments in Biodiversity Conservation. The IDB should promote the development of markets and certification schemes for biodiversity. The formation of strategic coalitions between NGOs, the private commercial sector and the public sector could be instrumental to this end. Coalitions with investors interested in environmental enterprise funds can promote and market the sustainable use of natural resources, such as sustainable forestry and ecotourism. Investments in biodiversity can yield long-term benefits to a wide range of interest groups as well as to society as a whole.

Continue Working with Intermediary Financial Institutions. The IDB should continue working with intermediary financial institutions to promote the use of environmental conditions in their lending activities, such as the Green Protocol in Brazil. If commercial banks join in, these initiatives could have a significant impact in the region.

Continue Strengthening Regulatory Frameworks. Private sector activities should be subject to rules and regulations with sufficient environmental safeguards. The Bank should continue to assist in the development of an appropriate regulatory framework with reasonable and enforceable environmental norms and standards. More attention could be given to environmental enforcement with both public and private

involvement. In several countries of the region, NGOs are able to bring environmental cases to court. In the framework of its operations on judicial reform, the Bank should assist countries in improving environmental enforcement, using innovative mechanisms such as private enforcement and alternative dispute resolution.

Improve Coordination Between Multilateral and Bilateral Donors. Improved coordination would avoid duplication and lack of coherence between the activities of the various agencies in the region. If done effectively, it would also promote complementarity.

How to Improve the Role of the IDB in Biodiversity Financing

Workshop participants noted that the status of biodiversity conservation as a dimension or small component in Bank projects may be negatively affected by the IDB's internal incentive structure for the staff. Large loans and fast disbursements are preferred due to their lower administrative costs, at the expense of innovative pilot schemes necessary for biodiversity conservation. The absence of a clear Bank policy on biodiversity conservation is considered another obstacle. As a result of the Eighth General Capital Increase, the Bank has a mandate on biodiversity conservation but still lacks operational guidelines. The participants suggested that a biodiversity strategy or policy paper would increase the status of biodiversity inside the Bank. Such a paper should identify the major constraints the Bank faces in biodiversity conservation and assess possible changes in Bank policy and procedures to overcome those constraints. It may also provide an opportunity to discuss the issue of concessional resources for biodiversity conservation within the Bank. In addition, a paper could include guidelines on how to include biodiversity issues in the sectoral planning and policy development processes, as well as the integration of biodiversity components in investment operations in other areas, like transportation, energy and agriculture. The paper could also address the need to build flexibility into the design of biodiversity operations to allow for adaptation of the project during its implementation and to accommodate changes in policy, practice and science.

Three main courses of action were suggested to raise the status of biodiversity inside the Bank: (i) the Bank should prepare a report about IDB experience in biodiversity projects and development projects with biodiversity components; (ii) a task force should be formed to work on a biodiversity policy or strategy; and (iii) IDB staff should be trained to understand the biodiversity concept and its implications for conservation and development activities. As a first step, the report on the IDB experience in biodiversity conservation should create awareness within the Bank about its role in biodiversity conservation and simultaneously serve as a source of useful information to other interested parties.

To improve the performance of Bank operations, the participants made the following recommendations: (i) IDB staff should be encouraged to devote more attention to the incorporation of innovative, small biodiversity components in projects; (ii) the IDB should improve monitoring procedures to ensure the implementation of biodiversity components in development projects; and (iii) the Bank should build more flexibility into the design of projects that include biodiversity to allow for adjustments during implementation, especially of new and innovative pilot schemes.

In addition to the internal Bank policy changes described above, the participants also discussed implications for the role of the Bank in light of the economic liberalization process in the region and public sector reform. In some countries of the region, the importance of the Bank as a source of capital is decreasing as the availability of alternative (international and domestic) private sources of capital increases. This process is likely to continue on a par with the economic modernization process which has led to the liberalization of trade and increased economic integration, decentralization and privatization. The participants noted that the IDB should build upon the opportunities these changes

provide. The Bank is currently preparing numerous operations in the relatively new area of modernization of the state, including privatization and public sector reform, with Bank activity at this stage focusing on judicial and civil service reform. However, there seems to be little dialogue between the Environment Divisions and the Modernization of the State Unit responsible for those programs about issues relevant to environment in general and biodiversity conservation in particular. The IDB should also use its substantial experience in institutional strengthening and regulatory reform operations to increase its activities in the area of capacity building in conservation programs, including strengthening of the institutions that are responsible for implementing the Bank's programs. In addition, training programs for Bank staff and relevant stakeholders should be developed.

Most of the participants agreed that the Bank should continue building broader support for biodiversity conservation. The IDB should continue developing the instruments currently at its disposal to work with local communities and NGOs, such as technical cooperation funds and the small grants program.

Achieving Financial Sustainability in Biodiversity Conservation Programs[1]

by Jeffrey A. McNeely[2]

This paper surveys the current situation, present trends and innovations in the financing of biodiversity conservation. It describes promising financial instruments and the policies, technologies and entrepreneurial initiatives required to make the instruments successful. It estimates the importance of each of the possible financial mechanisms, describes limits to their wider use and identifies actions that could enhance their leverage. It emphasizes innovative tools that are relatively poorly known.

The paper seeks to help the widest range of sources who could (and should) have a hand in crafting and using these tools. They include the full spectrum of those active, and potentially active, in biodiversity conservation: international agencies; national governments; the private sector, both national and multinational; and NGOs, both local and international. It concludes with recommendations for the role of the IDB in biodiversity conservation, both through direct conservation financing and through actions in policy support, resource mobilization and program financing.

Sources of Finance and Policy Leverage

Financial support for conservation has increased in recent years primarily through greater cooperation among five principal sources: international agencies, governments, the private sector, international NGOs, and local NGOs. It is widely appreciated, however, that insufficient investment is being made in conserving biodiversity, and that innovative approaches are required for generating the additional financial support required for implementing the Convention on Biological Diversity (Li, 1995; Newcombe, 1995; WRI, 1989).

Under the Convention on Biological Diversity, governments clearly have the lead role in formulating policies, are sovereign over their own biodiversity and responsible for the conservation and sustainable use of biological resources. International NGOs can play an influential policy making role, even though their financial means are relatively limited. Local NGOs are likely to be especially influential at the grassroots level, but their policy influence may be limited by a lack of financial and human resources.

The private sector has significant but untapped influence to exert through its pattern of investments. Most of the tools that require the private sector are being led by international businesses. As national companies or subsidiaries of multinationals gain command of additional resources, their potential role will grow both in partnership with international companies and on their own. The challenge is how to form partnerships between relevant government agencies and the private sector, drawing on lessons stemming from these partnerships in developed and developing countries (Jennings, 1995). Both a

[1] This paper grew out of work done by IUCN in the field of conservation financing over the past several years. It builds upon work done with Paul Weatherly in preparation for the IUCN-Asian Development Bank Conference on "Biodiversity and Conservation in the Asian and Pacific Region" held in 1994. It has been further enriched by contributions to a workshop organized by IUCN and CSERGE held in Zimbabwe in 1995. Special thanks go to David Pearce, Ed Barbier, Tim Swanson, Juan di Castro, Kathy MacKinnon, Kerry ten Kate, Dhira Pantumvanit and Theo Panayotou for their stimulating comments. Frank Vorhies, Martha Rojas and Alain Lambert at IUCN also provided useful material. Applying this global perspective to the particular circumstances of the Inter-American Development Bank was made possible by a grant from the IDB.

[2] Jeffrey A. McNeely is the Chief Scientist with IUCN-The World Conservation Union in Switzerland.

medium-term analysis of where growth in economic and political power will come, as well as a long-term analysis of where the conservation challenges will lie, point to the for-profit private sector as a key actor. The analysis of tools that follows seeks to identify as many ways as possible to build bridges between those investors currently committed to conservation and those who could become so within the short to medium term.

International Cooperation

The Global Environment Facility (GEF), the interim Financial Mechanism of the Convention on Biological Diversity, has allocated over US$300 million to biodiversity in its pilot phase and has doubled its level of investment in its first three year implementation phase. It is clear, however, that the funding generated by the GEF will not be sufficient to meet all of the needs for investments in conserving biodiversity. Various innovative tools can be initiated at the international level to generate additional funding. This section suggests a few possibilities.

Charging for Use of the Global Commons

The global commons, including biodiversity (in its general sense) continue being misused or over-used, at least partly because they are still perceived as being "free" resources. Bezanson and Mendez (1995) point to the need to manage the global commons and to charge for its contributions to various transnational activities. They call for a system of user rights, regulations, rents and charges as a way of governing the commons and generating revenue. At least a portion of this revenue should be allocated for conservation purposes, perhaps through payments directly to the Financial Mechanism of the CBD.

Clearly, the use of the global commons is a major political issue, but it already is generating significant economic benefits. The challenge is to find ways to ensure that those realizing benefits also pay at least some of the costs of conservation.

Joint Implementation

As outlined in the UN Framework Convention on Climate Change, the basic premise of joint implementation (JI) is to enable voluntary cooperation between two or more countries with the aim of reducing greenhouse gas emissions as cost-effectively as possible. In most cases, JI projects will involve countries where mitigation costs are relatively low in order to maximize the possible global benefits, enabling countries with high marginal costs to invest in countries where a greater reduction of greenhouse gas could be achieved for the same level of funding. JI offers countries with limited or expensive mitigation options the opportunity to pursue more cost-effective mitigation opportunities elsewhere, thereby dramatically reducing the costs of achieving a given net reduction in carbon dioxide emissions. The Conference of the Parties of the Climate Change Convention has insisted that joint implementation financing is to be additional to the financial obligations of industrialized countries and existing official development assistance flows, reinforcing the crucial role of the private sector in the success of the system (Trexler, 1995). The effects of such investments on biodiversity could be significant. Clearly, joint implementation needs to be seen as just one part of an overall approach to improved forest management and conservation of biodiversity. Ultimately, the success of joint implementation funding in the forestry sector will be measured by the contribution it makes to national biodiversity objectives. Experience to date indicates that joint implementation funding has fostered improved management practices which have had a positive impact on biodiversity (Phantumvanit, 1995). Trexler (1995) concludes that biodiversity conservation can be a legitimate and valuable offshoot of a climate change mitigation portfolio that includes a forest conservation element. The biodiversity community has a major stake in seeing that this comes about, but it is largely up to them to address the difficult policy and technical questions that will enable biodiversity concerns to be included in the climate change discussions.

While joint implementation funding is relatively limited, it could be used to leverage improved forest management that would have significant positive impacts on biodiversity. Those interested in biodiversity in forests are now in a position to use joint implementation to explore innovative funding arrangements and develop their response to future financing regimes. If carbon can be traded successfully for forest development capital, then other forest services could be traded under future international regimes.

International Taxation

International taxation of transnational activities is justifiable because such activities use the global commons and often cause negative externalities such as environmental pollution; they are essentially free riders on the global governance system. A very small tax on international trade, again made possible by new technology, could generate vast amounts of funding because, according to 1992 data, the annual volume of international trade is in the neighborhood of US$38 trillion (thousand billion). International tourism is a special form of international trade that might be relatively easy to tax.

Owen Stanley (1994) explores the possibilities of an environmental tax on air transport, such as through a tax on air transport fuel. Bezanson and Mendez (1995) suggest that activities with negative international externalities such as ocean dumping and other marine pollution, military expenditures and arms transfers, are also possibilities for international taxation, both for correcting market failures and for generating revenue. However, it should be noted that the U.S. Congress is strenuously opposed to any form of international taxation, so the likelihood of significant funds generated through this mechanism seems to be relatively low, at least for the time being.

Generating Funds From the Trade in Tropical Timber

Barbier (1995) suggests a role for new tropical timber trade policies in fostering trade-related economic incentives for sustainable forms of management which will encourage the conservation of biodiversity. He concludes that innovative mechanisms for financing sustainable management of tropical forests, international compensation for biodiversity conservation, and trade-related incentives for efficient and sustainable management of tropical forests are critical and complimentary components of any comprehensive global strategy for biodiversity conservation.

OFI (1991) has recently argued the case for a tax transfer of revenue on the trade in tropical timbers. A justification for this is that royalty revenues to producer country governments from tropical timber are often low in relation to the consumer value of products. Moreover, revenues from taxes on imported tropical timber products accruing to consumer governments are relatively large. Finally, a relatively modest reduction in the rate of taxation at the consumer end of the chain would allow a reasonably large increase in the stumpage value of the resource without affecting the end price.

Tools Governments Can Initiate

The Convention on Biological Diversity recognizes that the financial support and incentives provided to implement the objectives of the CBD conform to each country's financial capabilities (Article 20). All governments have conflicting demands on the available financial resources, and will need to ensure that expenditures in support of the CBD are able to compete successfully with other demands for the limited funds available. It is clear that many governments can use policy instruments to change the ways that funds are being raised and spent in order to make them more consistent with the CBD. Many of these "green funding mechanisms" can both generate funds and change the behavior of individuals and institutions to make them more "biodiversity friendly." This section will discuss several new approaches to generating funds that will serve to support the objectives of the CBD, even if the funds generated are not directly provided to the government agencies assigned to implement the Convention. Clearly, donor governments and agencies have numerous other financial mechanisms

available to them, not least being direct provision of funding to activities that implement the CBD. Such mechanisms are not discussed here because they have now entered the mainstream of donor behavior. Donor investments activities related to biodiversity probably exceed US$10 billion per year.

It is sometimes contended that much of the value of biodiversity is primarily global, but this is due largely to a lack of domestic appreciation of the full values of biodiversity to the country involved.

Environmental Taxes and Charges

CSD (1994) points out that conventional taxation systems throughout the world tax work, income, savings and value added and leave untaxed (or even subsidized), leisure and consumption, resource depletion and pollution. The implied reduced incentives for work, savings, investment and conservation, and increased incentives for leisure, consumption, resource depletion and environmental degradation result in more environmental degradation than would have been the case had incentives been the reverse. Therefore, a reform of the fiscal system that would reduce conventional taxes and replace them with environmental taxes so as to leave the total tax burden unchanged (revenue neutral) would bring the economy closer to sustainable development by stimulating economic growth and resource conservation and discouraging the depletion of resources and environmental pollution.

Fiscal reform would save government expenditures on environmental regulation and pollution abatement and it would indirectly advance the objectives of Agenda 21. The potential for environmental, or "green" taxes is great in many countries (Broadway and Flatters, 1993; Bruce and Ellis, 1993; OECD, 1993b; Barde and Owens, 1993). A carbon tax is already being collected on the use of fossil fuels in Denmark, Finland, the Netherlands, Norway and Sweden. Costa Rica offers a precedent-setting example of the use of one kind of effective charge that serves to benefit biodiversity: a water user fee (Repetto, 1986). The idea is to levy a tax on the use of water by utilities and irrigation districts and apply that tax to the maintenance of forested watersheds. The government is considering charging approximately $6 million per year to the national water company and $3 million per year to the national electric power company. These fees would yield an income of approximately $7 per hectare per year for management of the 1.3 million hectares of forest land in watersheds.

Repetto *et al*. (1992) analyzed a wide range of environmental charges, including effluent charges on toxic substances and vehicle emissions, recreation fees for use of the national forests and other public lands, product charges on ozone-depleting substances and agricultural chemicals, and the reduction of subsidies for mineral extraction and other commodities produced on public lands. This sample of potential environmental charges in the United States would reduce a wide range of damaging activities while raising over US$40 billion in revenues. Recreation fees in national forests, for example, could yield US$5 billion in revenues. These findings refute the argument that environmental quality can be obtained only at the cost of lost jobs and income.

The main barrier to the wider use of these taxes and fees in supporting the conservation of biological diversity lies in the mismatch between locations of habitats containing high levels of biodiversity (often protected areas far removed from the mainstream of national economic activity) and users who can afford to pay a meaningful fee. Thus, governments will need an additional incentive to apply fees across watershed boundaries. One such incentive can come from the value of a reputation as a pioneer in this field. The first few countries that make a serious attempt to implement a water-based fee system for support of forest management and conservation, for example, will likely see additional donor support.

While taxes are predictably unpopular with politicians, green taxes such as those on energy, agrochemicals, logging and land use could make a significant contribution to conserving biodiversity. Combined with limited and targeted subsidies for activities with significant public good aspects or

positive externalities such as conservation of biodiversity, these measures could reduce financing needs even if no additional revenue is generated (Panayotou, 1995). Finally, taxes and charges have an impact on trade and competitiveness, so the gradual introduction of economic instruments for internalizing costs should be considered a crucial part of economic development policy.

Tradable Permits

Considerable work is being done on tradable permits, an approach that has been developed recently for controlling carbon dioxide emissions (UN, 1995; Hahn and Hester, 1989; Panayotou, 1994). Among incentive-based policies, the choice between charges and tradable permits depends partly on the capabilities of regulators. Although tradable permits have been used for control of air and water pollution in the United States and for fisheries in New Zealand, and have been suggested for restricting emissions of greenhouse gases, they tend to be more administratively demanding than charges because the latter can typically be implemented through the existing fiscal system. Still, tradable permits offer considerable potential for generating funds for conserving biodiversity (Sedjo, Bowes, and Wiseman, 1991).

Swanson (1995) suggests an approach to contracts for biodiversity which would entail the acquisition of the rights to particular land uses that are especially detrimental to the supply of biodiversity. For example, Schneider (1992) suggests that the supply of biodiversity from the Amazon could be ensured only if the "burning rights" were acquired from local users, suggesting that a contract for the transfer of rights to clear and burn the lands in the Amazon Basin would ensure the supply of biodiversity demanded from that region. Land owners, according to this approach, could be induced through contractual agreements to transfer such rights. If these rights were freely transferable, then economic theory suggests that the optimal distribution of land uses would result. So long as all of the uses of a given area are valued, the property rights approach allows for the allocation of land uses between the various competing users (Pearce, 1992).

As summarized by Swanson (1995), a form of property rights could, theoretically, efficiently allocate the various rights of land use between the interested parties. If the various services flowing from the ownership of a parcel of land could be identified, then the people who wanted biodiversity would simply acquire the rights from those who are able to supply it. However, he points out, the practice of transferring development rights differs quite considerably from the theory.

Panayotou (1995) has also proposed the idea of internationally tradable conservation credits as an instrument for broadening the market for biodiversity values beyond their direct use value to extractive industries. Recent work on the value of biodiversity (e.g., Pearce and Moran, 1994; Barbier *et al*., 1994) indicate that the indirect use value and non-use values of biodiversity generate far greater willingness to pay by the general public than the use values implied by the rather thin market in bioprospecting. However, no marketable instrument is currently available for capturing these non-use values other than voluntary contributions to NGOs.

Privatization and Property Rights

It is clear that insecure property rights over natural resources have been a major factor in the loss of biodiversity, leading to underinvestment in land improvement, soil conservation, tree planting, and other long-term investments which foster the maintenance of biodiversity. This, in turn, leads to low agricultural productivity, low farming incomes and clearing of forests to obtain additional land for cultivation. Secondary effects include low tax revenues and high public expenditures on poverty alleviation, forest protection and mitigation of off-site effects such as the sedimentation of dams and reservoirs (Panayotou, 1995).

Debt-Related Measures

Various approaches to debt relief, such as debt rescheduling, debt-for-equity or debt-for-nature

swaps (discussed further below) have contributed to a reduction of the outflow of financial resources from developing countries and can continue to make contributions to external financing for countries that are actually servicing their debts. In this regard, debt-for-policy reforms or debt-for-sustainable development may have a greater promise than the narrowly conceived debt-for-nature swaps.

An example of debt-for-policy arrangements is the Enterprise for the Americas (EAI) program, which links forgiveness of bilateral debt held by the U.S. government to policy reforms mostly to do with regulations and laws that promote a market economy (Gibson and Shrenk, 1991). In addition, the agreements mandate the creation of a fund capitalized by local currency bonds issued by the central bank that pay off over an extended period of time. A limitation in the view of some environmental organizations is the requirement that an EAI agreement can only be achieved after a country has accepted an economy prescription from the International Monetary Fund. Many groups object that such agreement ("conditionality") leads to both social and environmental stress.

Tools the Private Sector Can Initiate

In 1993, private financial flows to developing countries reached US$159 billion (ten Kate, 1995), far more than the $56 billion in development assistance. The private sector has profound influences on biodiversity through its use of resources, trading patterns, and marketing. Many private sector investors are already deeply involved in biodiversity, holding extensive areas of land important for conservation, promoting bioprospecting (see below), carrying out biodiversity-related research, and supporting conservation efforts in the field. Exxon, for example, has recently made a US$5 million grant to support conservation of the tiger in Asia (its advertising symbol). Many industries are becoming much more "green" and therefore useful potential partners in biodiversity.

This trend is most strongly seen in the industrialized countries, but many developing countries are seeking to promote rapid economic expansion. As a consequence, (i) the local business sector will increasingly have the resources to contribute to conservation, and (ii) the emerging consumer class will have the interest, influence and resources to support national conservation efforts. This assumption leads to a focus on identifying incentives for the for-profit private sector to play a greater role in the financing of conservation. In the past few years, many commercial, investment and private banks contributed to environmental initiatives and should be considered as a source of loanable funds. While confidentiality makes it difficult to specify the precise financial resources involved, the fact that banks are seriously considering environment-related investments is encouraging. For example, a recent survey by the United Nations Environment Program (UNEP) indicated that 88 percent of the banks responding said that they either already invest in environment-related firms or expect to do so within 15 years (UNEP, 1995). This section discusses the potential for private sector financing of biodiversity. If the private sector can become a full partner, then the world could see a new era of conservation. An era in which civil societies have the will and the means to assume an effective stewardship over their own resources, biodiversity included.

Already, the International Chamber of Commerce, the World Business Council for Sustainable Development, Keidanren in Japan, and many others are channeling substantial private sector resources to provide business leadership in sustainable development and to promote the attainment of high standards of environmental and resource management in business. Many individual companies are working on innovative approaches to ensuring that their activities preserve fragile ecosystems, even when mineral extraction is involved.

Transfer of Development Rights and Credits

The real potential of JI (as already discussed) as a funding source for biodiversity conservation projects

lies in the private sector of industrialized countries, including electric utilities, automobile manufacturers, and chemical manufacturers who may find the potential cost-effectiveness of carbon offsets to be an attractive alternative to facility-specific emissions reductions (Trexler, 1995).

Prospecting Rights and Biological Royalties

Conservationists have long cited the untapped potential of rain forest species for yielding useful drugs as a reason for saving tropical forests (Eisner and Beiring, 1994; Mendelsohn and Balick, 1995). Within the last few years a number of partnerships have been formed to try to develop this potential to the point where new drugs, derived from naturally occurring compounds, are on the market. Three models can illustrate how "bioprospecting" is evolving, examine what forces are shaping this field's evolution, and suggest how significant bio-prospecting may become as a source of financing for biodiversity conservation.

The first model is illustrated by the now-famous collaboration between Merck and INBio (Sittenfeld and Gám
national drug company access to material from which compounds are extracted and screened using various bioassays to see if the compounds have useful properties. Those compounds with
long process of animal and human trials and certification before they become a profitable product. INBio coordinates the collection of material and the initial stages of extraction. Merck will support enhancement of INBio's capacity to carry out its work as well as donate a portion of the profits from any successful drug as royalties to INBio.

This model has some serious shortcomings, such as the very low rate of royalty to the country of origin. This would only result in significant income to a country in case a drug company discovers a "blockbuster"drug with wide demand and a high price. And even if income is generated, it would have no direct link to the lives and livelihoods of people living in the forests. A second model improves on some of these shortcomings. Shaman Pharma-ceuticals was formed to conduct bioprospecting. The most fundamental difference is that Shaman has no other business than bioprospecting. By contrast, the large drug companies are likely to continue to see the largest natural source of testable compounds to be those derived from microbes (e.g., penicillin, Mevacor), interesting species of which may occur as frequently in habitats like the soils of parking lots and golf courses as they do in rain forests. Also, large companies can afford to write off expenses of a limited investment in bioprospecting against the public relations value of media coverage linking a giant company to rain forest preservation. By contrast, Shaman will prosper only if it finds marketable drugs.

Shaman has raised more $100 million in capital and has taken out patents on two drugs, which are now in clinical trials. A key feature of Shaman's approach is to focus on drugs from species that indigenous peoples believe to be efficacious. A second feature is that Shaman pools risk and profits among all its indigenous cooperators. Shaman has also established the Healing Forest Conservancy, a nonprofit organization that will channel a portion of the profits directly to cooperating indigenous peoples.
drug companies, Shaman considers the exact percentage to be paid as royalties to be a corporate secret.

A third model is offered by an even newer company dedicated to bioprospecting Andes Pharmaceuticals. Andes, like Shaman, is dedicated to bioprospecting in cooperation with indigenous peoples. However, the Andes approach builds capacity to screen biological materials for useful drugs in the country of origin of the material being tested. Andes has signed agreements with several South American universities and NGOs to transfer state-of-the-art screening technology, including bio-assay guided fractionation, to laboratories in the country where species are being collected. In this case not only would the country benefit from the institution building, but what had been costs (for screening) subtracted from possible profits would become

income to the institution. Moreover, because the developing country institution and company would hold the patent, a much more substantial percentage of the ultimate value of the drugs (rather than a 1% or 2% royalty) would stay in the country of origin.

Even if all these models prove successful, the income streams generated will not be significant, by themselves, as a source of funding for conservation. At best these need to be seen as complements to other efforts that are more immediate and more lucrative. The private sector has a leading role to play in finding these more mainstream businesses (Acharya, 1995). While bioprospecting may not generate significant income for conservation, it still has important advantages for tropical countries. Involvement in bioprospecting partnerships with business can produce benefits that serve as an incentive to conserve biodiversity. Bioprospecting can help countries develop capacity to add value to their genetic resources as well as important skills in areas such as biotechnology and information technology. Bioprospecting can support, at least potentially, various conservation activities and lead to the development of jobs and products for local markets. Therefore, while it may be important in the long run to ensure income from a fair share of any royalties generated, the focus should be on short-term benefits such as capacity building and technology transfer, especially at the local level (see Table 1).

"Green" Business Investments in Biodiversity

World trade patterns are changing rapidly. Many environmental NGOs are lobbying for more studies of the possible environmental consequences of new trade regimes such as those envisioned under the North American Free Trade Agreement (NAFTA) and the General Agreement on Tariffs and Trade (GATT). These groups seek to use these agreements to promote globally uniform environmental impact assessment procedures and environmental management practices. Most groups have so far emphasized identifying new regulatory mechanisms capable of addressing environmental problems that will emerge with new trading patterns.

Advocates of mechanisms which extend developed country environmental regulations to developing country economies (NAFTA being the prime example) face the difficulty of implementation in countries where governmental agencies do not have a long history as effective watchdogs (Stavins, 1989; Jennings, 1995). The factors which inhibit governmental mechanisms from carrying out such a role effectively probably lie beyond the ability of treaty-based covenants to reach, much less address adequately. These factors include lack of trained professionals in government service, low public sector salaries, inadequate legal systems, a poorly developed tradition of public interest advocacy or legal action, less than independent media, and the robustness (some might say greed) of a relatively unfettered private sector. The prospect for effective *governmental* regulation under such conditions does not look bright.

Recognizing the inadequacy of negative pressure, many environmental groups are already trying to create positive incentives to influence the way new trading patterns, products, markets, industry, etc. interact with the environment (OECD, 1991b; Clark and Downes, 1995). Some of these examples are becoming well known to the extent that they have captured a market niche. To name four: (i) Ben & Jerry's Ice Cream (made with wild gathered nuts from the South American rain forest); (ii) Banana Amiga (a green seal given by a consortium of U.S. and Costa Rican environmental NGOs); (iii) Café Monteverde (a partnership for sustainable coffee production between Montana Coffee Traders, The Nature Conservancy, and the Monteverde Cooperative—Costa Rican coffee farmers near Monteverde); and (iv) vegetable ivory (a material for buttons and jewelry harvested sustainably in rain forest buffer zones in South America by indigenous people in conjunction with Conservation International).

Most schemes depend on marketing trust in a plausible environmental benefit along with the product. Local and/or international NGOs can play

a role in certifying the sustainability of the effort. Local producers agree to abide by certain rules in exchange for the green seal imprimatur of the environmental NGO(s).

Key to the success of these arrangements is the turning of environmental concern into an incentive to an entrepreneur to assume a financial risk. Most examples have resulted from unusual initiatives often traceable to the vision of a single entrepreneur or field worker. Few, if any, have come from business-as-usual activities of local private companies. To encourage such creativity on a larger scale will require a more accessible framework for structuring the deals and efforts to reduce the risk to all parties involved.

At the moment each participant in such a sustainable marketing scheme is assuming risk well beyond what is traditional in his or her own sphere. Environmental groups who endorse or sponsor "sustainable" schemes or investments risk damaging their fund-raising activities which might come from publicity about a failure. Marketing entrepreneurs risk losing their market share if they lose an endorsement. Local producers and farmers risk loss if their investment fails to allow them to penetrate a new market which would give them a higher selling price. Local groups (e.g. farmers cooperatives, community organizations, local NGOs) risk loss of future grants from donors.

A national environmental foundation or trust could help lessen all these risks and hence improve the climate for fostering the sustainable use of resources by the private sector. To play this role a trust would have to provide a home at the national level for local groups and scientists dedicated to the sustainable use of natural resources. A trust could accomplish this task by committing to a long-term program to strengthen the capacity of key local groups and institutions as well as by providing oversight through the monitoring of its grantees. In combination the trust could help lessen the risk of private investment in sustainable activities by certifying the claims of all those involved in a sustainable scheme. Such a service would have a great potential value, which could be the basis for generating income.

Trade in sustainable products could lead to income or capital increases for national trusts or endowments in several ways. A straightforward idea could call for a few percent of the market value of each sustainable product to be donated to the endowment. For example, Montana Coffee Traders donates $1.00 per pound of coffee sold to a sustainable investment fund usable by the Monteverde farmers cooperative with the approval of a local conservation organization and the Institute for Tropical Science which manages the cloud forest preserve. Another method might be through cooperative fund raising with international environmental groups.

A more difficult to create method of funding would be the direct investment of the assets of the trusts in joint ventures. Since this approach raises the potential of conflicts of interest, careful attention should be paid to defining the relationships among the various parties. One successful example of this dual use of money, investments and income, can be found in *Fundación Chile* (see Weatherly and Warnken, 1994). *Fundación Chile* was created as result of unique circumstances involving the expropriated assets of ITT. An August 1976 agreement between ITT and the U.S. and Chilean governments resolved the dispute and created *Fundación Chile* with an endowment of US$50 million in local currency. *Fundación Chile's* purpose is to stimulate agricultural exports through the transfer and development of technologies and new business ventures to commercialize those technologies. Key to *Fundación Chile's* success was a close association with ITT for the first ten years. This association allowed *Fundación Chile* to make use of ITT's human resources, of which the most valuable were world-class managers and venture developers. Now, *Fundación Chile* is fully independent in its finance and management.

If such a two-track approach to creating a framework of positive incentives for investment in sustainable production can be set up in the context of a national trust fund, then the potential to raise

money could be enormous. One new source would be capital with social goals attached. The general public has an interest in investing in businesses with social and environmental benefits, and the managers of pension funds, church funds, university and foundation endowments, etc. have a desire to invest part of their assets in funds that meet social and environmental criteria. So far the growth of this kind of investment has been limited by the paucity of services available to certify their social and environmental benefits. National trusts can provide a way to develop those services.

Many other possibilities also exist for providing incentives to the private sector. For example, the International Finance Corporation (IFC) has been developing a proposed $20-30 million Biodiversity Enterprise Fund for Latin America. This would be a private equity fund to mobilize capital to invest in biodiversity-related projects such as alternative agriculture (organic farming, aquaculture and the use of underutilized species); sustainable forestry; nontimber products from forests and wildlands; ecotourism; biodiversity prospecting; pollution control; and other activities that restore or take development pressure off of biodiversity. The proposed Fund would be designed to bring together the investors, grant funds, and expertise and make them available to entrepreneurs.

The above discussion touches on just a few of the many possibilities for involving the private sector in implementing the Convention on Biological Diversity. Given the immense sums involved in the private sector, the dependence of many private businesses on biological resources, and the realization by many business leaders that their future, too, lies in sustainable development, the great scope for expanding the collaboration between the private sector and the CBD remains one of the most promising areas for improvement in the coming years.

Tools NGOs Can Initiate

Conservation finance dates from the work of the NGOs that have been raising money and actively lobbying for conservation for at least a hundred years. It is largely as a result of the lobbying and advocacy efforts of NGOs over the past fifteen years that donors and governments have increased their support for conservation. NGOs are still in the forefront of innovation in bringing more investors and more financing to the support of conservation (WRI, 1989; Clark and Downes, 1995; Dillenbeck, 1994; IUCN, 1994; Norris, 1995; Spergel, 1993). The following describes some of the tools that NGOs have used, and will likely continue to use, in support of the efforts of governments and the private sector.

"Debt-for-Nature" Swaps

Debt-for-nature swaps are the best known of a family of deals that exchange debt in "hard" currency for local currency and/or equity in local enterprises. The concept of debt swaps is described in many papers and reports (e.g., Gibson and Schrenk, 1991; Hansen, 1991; Rubin *et al*., 1994). One key feature is worthy of emphasis: these swaps are a "win-win" deal for all involved. In a typical swap, the commercial bank holding a nonperforming note of a developing country is able to get cash (at a discount over face value) for the note and clear its books. The central bank that redeems the note for local currency gets out from under a portion of its debt. The donor, often a philanthropic foundation in the early days, gets more impact for its grant money through a better rate of exchange for its donation for conservation. And the international NGO arranging the swap sees an increase not only in the local currency funding for its projects, but also in the number and amounts of donations to its programs.

Two facts explain the sudden popularity of debt swaps. First, swaps generated a great deal of publicity in the mainstream press, especially in places like financial journals where conservation programs and activities of conservation NGOs usually do not receive much attention. Favorable press boosts fund raising in many ways that, though difficult to measure, pay handsomely not just for the NGO involved, but often for the commercial bank and debtor country. Debt-for-nature swaps generated a great deal of publicity for international

conservation NGOs, such as The Nature Conservancy, the World Wildlife Fund and Conservation International, who pioneered them in the 1980s. Unfortunately, debt swaps, being no longer novel, do not generate the same press as they did five or six years ago.

Second, the developing country debt crisis was peaking when debt-for-nature swaps were first tried. Even though in the aggregate the total amount of debt "restructured" through debt-for-nature swaps was a small percentage of the needed debt relief, many countries welcomed their contribution for its symbolic value and were willing to tolerate what is, in effect, a two-tier exchange rate. Now, more and more countries in Latin America, at least, are well along an IMF-approved path toward stable economies and freely exchangeable currencies. Most improvement in the debt situation has been experienced by middle-income countries, while the majority of the poorest and most indebted countries are still unable to meet scheduled debt service payments, accumulating arrears at a growing pace. Since debts are serviced in hard currency and the only way for most of the poorest countries to raise hard currencies is to export commodities and natural resources, the debt burden is closely linked to the overexploitation of natural resources.

Even where still possible, debt swaps can present significant difficulties. If central banks redeem notes by "printing money," then the impact of swaps could be inflationary. Debt swaps often take a long time to arrange. Making the deal itself has, in some cases, overshadowed the development of the program to be funded by the swap.

Fundraising from the Public

The general public also has a surprisingly generous willingness to pay for conserving biodiversity, provided appropriate means are available for them to exercise this choice. Traditionally, the usual way of expressing this support is through charitable giving, which sometimes can reach very significant numbers. For example, in the United States private sector contributions in 1993 totaled US$126.22 billion, including $103 billion from individuals, $9 billion from private foundations, $8.5 billion from bequests and $5.9 billion from corporate foundations. Of this, the total donated to wildlife and environment issues amounted $3.19 billion.

International NGOs have pioneered the art of fund-raising targeted at a particular location, species, or issue. One example can be cited to show the kind of success possible. In the 1950s, a group of U.S. pacifists fleeing conscription in the Korean War settled in a mountainous region of Costa Rica and formed a dairy farmer's cooperative. Their cooperative established a cloud forest in Monteverde as a private nature preserve. Through television nature programs shown in the U.S. and Western Europe, Monteverde became a popular "ecotourist" destination in the 1980s. In the late 1980s a Scandinavian school teacher visited Monteverde. When she returned home, she started raising money to enlarge the Monteverde forest through land purchases. She helped found a targeted fund-raising organization called the "Children's Rain Forest," or *Bosque Eterno para los Niños*. Within a few years, this targeted effort was raising approximately $6 million per year and employing 40 full-time staff in their offices near Monteverde (Paul Weatherly interview 1992). Meanwhile, in large part because of their fundraising efforts as well as the efforts of more established conservation organizations, tourist arrivals at Monteverde grew by more than 30% annually in the early 1990s.

Targeted fund-raising works because it gives a sense of ownership to individual donors. Whether the cause is the jaguar or an island, a whale or a coral reef, contributors identify with the object. This success has created internal tensions within international conservation NGOs between scientific and field staff who understand that true security of biologically diverse resources depends on creating a sense of ownership among the people living in and around protected areas. Directors of fund-raising campaigns have often, against the advice of field staff, allowed their fund-raising literature to imply that local people are the enemy of conservation, or at

least indifferent bystanders, rather than its stewards.

Table 1
Advantages and Disadvantages of Various Funding Mechanisms

Funding Mechanism	Advantages	Disadvantages
I. International Cooperation		
1. Charging for use of the global commons	! Potentially vast amounts of funds ! User pays	! Require international agreement difficult to attain ! Needs new institution to manage funds
2. Joint implementation	! Large amounts of funds primarily for forest biodiversity ! Links biodiversity with climate change	! Requires unprecedented levels of coordination ! Tacitly accepts continued high consumption of fossil fuels in North ! Funds available only for direct forest management
3. International taxation	! Potentially vast amounts of funds ! Can influence policies to be more supportive of biodiversity	! May not be GATT- compatible; requires political will ! Funds may be diverted to purposes unrelated to biodiversity
4. Funds from trade in tropical timber	! Could raise $1.5 billion per year, with no effect on final product prices ! Provides incentives for improved forest management	! Consumer countries forego significant tax revenues ! Needs internationally agreed monitoring and enforcement
II. Governments		
5. Taxes and charges	! Can generate significant funds with existing structures ! Can build on "polluter pays" and "deficiary pays" principles ! "Green" taxes can change consumer behavior in favor of biodiversity without increasing total tax burden	! Many governments resist hypothecated taxation ! Taxpayer resistance ! Biodiversity-rich areas often distant from sources of funding
6. Tradable permits	! Can generate funding in the billions of dollars ! Can change behavior affecting biodiversity ! Specifies opportunity costs and provides mechanism for beneficiaries to pay them	! Administratively demanding ! Behavioral changes may last only as long as the payments ! Difficult to translate to international level
7. Privatization and property rights	! Property rights give responsibility to people living closest to the resources ! Assigning shares of privatized state corporations to conservation endowments helps retain public accountability	! Difficulty of government monitoring of resource management in remote areas ! Why use for biodiversity instead of other needs? ! Privatizing can destroy effective community-based management systems
8. Debt-related measures	! Can generate funds in national currencies and reduce (slightly) debt burdens	! Some resentment of "conditionality"
III. The Private Sector		
9. Transfer of development rights and credits	! Involves private sector in joint implementation measures which may benefit biodiversity	! Biodiversity benefits a side issue

10. Prospecting rights and biological royalties	! Significant funds could be generated by discoveries of new drugs or other substances from nature ! Utility of biological resources can be increased, thereby providing incentives for conservation	! Needs effective international agreements on intellectual property rights and royalties ! Long lead time ! Difficult for royalty income to reach field level ! Bureaucratic complications may lead to over regulation which stifles innovation and exploration
11. Green investments	! Private sector invests in biodiversity as result of enlightened self-interest ! Funds generated regularly from sales	! Weak capacity in some countries to regulate private sector ! Requires appropriate incentives from government
IV. NGOs		
12. "Debt-for- nature" swaps	! Generates significant funds in national currency ! Can be used to endow trust funds for long-term investment	! Discounted debts now less available ! Can be inflationary
13. Targeted fund- raising	! Allows public willingness- to-pay to be tapped in support of biodiversity ! Can build strong alliance among NGOs, public sector, and private sector	! Requires significant investment in fund-raising ! Needs sympathetic government regulations, such as tax deductions

Children's Rain Forest literature, at least until recently, pictured a photograph of six children, all blond Scandinavians, walking down a trail in Monteverde.

As countries continue to grow economically, targeted fund-raising will see a burst of growth, especially in countries where television programming is also growing. Campaigns targeted at specific species or locales could generate funds from the urban middle class but also could lead to tension between them and indigenous peoples living in the area targeted by the appeal. Developing strong financial support from the emerging middle classes without also worsening this tension is the challenge targeted fund-raising faces. If this challenge is met, then countries showing high rates of economic growth may soon be able to raise substantial amounts of financing for conservation. The key to success is to have representatives of both funders and local communities involved in the control and flow of such funds.

The preceding chapters have discussed a number of funding mechanisms, each with their own advantages and disadvantages (Tables 1, 2 and 3). Numerous other possibilities are certainly available and as conditions change in the future, perhaps even more will become feasible. The key lesson from this discussion is that funding need not be a limiting factor for implementing the Convention on Biological Diversity.

New Institutional Approaches to Managing Funds for Biodiversity

New institutions for managing funds for biodiversity are emerging at a rapid rate. Each country should develop institutions that are best suited to its own environment and consistent with its social and legal systems. This section discusses several opportunities whereby the various interested parties may come together to manage flows of resources that are secure in terms of their availability over time, and which enable local communities to obtain access to funds that are within national control.

Regional Approaches to Funding Biodiversity Projects

Cosslett (1995) proposed a regional approach to funding biodiversity projects, especially where transboundary environmental problems are largely of a regional nature (as in many coastal zones and international waters). He recommended establishment of Regional Marine and Coastal Environmental Funds (REMCEF) financed wholly or in part by revenues from economic instruments enacted at national levels. At least potentially, such funds could create a close linkage between pollution creating economic activity and remedial

environmental spending, thereby helping to correct markets and conserve marine biodiversity. The following factors weigh in favor of the creation of such a regional fund as a source of grants and concessional loans for capacity building and investments in the region (Cosslett, 1995):

- The necessity and cost-effectiveness of working cooperatively toward common environmental quality objectives.

- The need for relatively large investments over a period of time within the framework of a comprehensive regional action plan which provides clear policy guidance for such investments.

- The probability that funding forthcoming from the riparian countries is likely to be insufficient.

- The probability hat economic instruments can be mobilized to provide a significant part of the capital for the fund, which would enable the source of finance to be sustainable.

- The probability that the fund would lead to enhanced coordination between the various sources of finance, including regional and local governments, donors and commercial lenders.

Possible sources of financing for such a regional fund are the polluting and resource depleting activities which are being undertaken within the coastal areas surrounding regional seas. These include:

- a transport levy on shipping, which might take the form of a risk-based user fee involving a levy per ton of cargo linked to the amount of risk created by various kinds of cargo (these could be collected as part of the port fees paid by ships upon their departure from port);

- extraction fees, based on the expected value of damages associated with accidents related to the extraction of nonrenewable resources such as oil, gas and sand, in the region;

- a fisheries fee, levied upon capital employed in the fishing industry (this would have the added benefit of helping to reduce the over-capitalization of the fishing industry);

- a bonding scheme for hazardous materials, requiring ships that transport them to post a bond for the cost of cleaning up after an accident, with the amount of the bond varying with the environmental risk of the cargo; interest from funds deposited in the bond account would accrue to the environmental fund.

A Biotic Exploration Fund

Eisner and Beiring (1994) proposed the establishment of a "Biotic Exploration Fund" to develop contractual arrangements between the holders of biodiversity and those parties wishing to screen these organisms for biological and chemical activity.

At present, no intellectual property protection is provided to biodiversity resources found in nature (Reid, 1992). Thus individuals and countries engaged in developing their land resources will tend to ignore the potential value of the existing habitat as a repository for potentially valuable resources; if they cannot control the return on the investments required, then the investments are unlikely to be made.

However, based on experience in Costa Rica, Mexico, and elsewhere, it is possible that the right to simply examine biotic resources and screen for potentially marketable biological properties can command a price. This would enable biodiversity-rich countries to reap the benefits of resource use as well as compel the users to pay for the costs of biodiversity protection. Such agreements recognize the value of simply having and preserving biodiversity, providing a patent-like form of protection for plants and animals in nature. This is very much in tune with the Convention on Biological Diversity in that it ensures adequate compensation to the providers and protectors of genetic resources. Such a contractual system has the added benefit of not

requiring government coercion of private parties. Further, transaction costs are low enough and benefits high enough to make both parties eager to enter into the deal.

The existence of a biotic exploration fund would give intellectual property rights to biodiversity *de facto*, because countries rich in biodiversity would have the bargaining power to insist on payment for access to their resources. Organisms could be screened locally for antitumor, antifungal, antibacterial, and antiparasitic activity, and could be rated according of their chemical promise. Intrinsic advantages of having organisms screened near their source include freshness and building the scientific capability of developing nations. The proposal is to establish the biotic exploration fund withholdings in the amount of $250 to $500 million. It would be administered by a nonprofit organization which would have discretionary power over disbursement of the funds and would broker the chemical prospecting agreements between the biodiversity institutes and industry.

Table 2
Advantages and Disadvantages
of New Institutional Approaches to Managing Funds for Biodiversity

Funding Mechanism	Advantages	Disadvantages
1. Regional Funds	! Could form close link between activities generating pollution or other damage to biodiversity, and remedial environmental investment	! Needs regional cooperation and acceptance of new "green charges"
2. Biotic Exploration Fund	! Considerable levels of funding possible	! Needs intellectual property protection ! Long delay between investment and return ! who manages the fund?
3. National Funds	! Creates mechanism for long-term funding needs ! Gives control over donor funding to local institutions ! Can manage significant funds -- over $500 million by the end of 1995	! Problems with earmarking ! Sometimes high overheads
4. Trust Funds	! Allows support for diverse activities, often with small amounts of funding ! Can support recurrent costs ! Can promote co-funding and cooperation among many groups	! Overheads can be high and returns low, with insufficient funds reaching the field ! Requires significant investment in design and governance

National Funds

While international sources of concessionary loan finance and grants for environmental projects are growing, as indicated by this paper, some parts of the world are unable to take full advantage of this opportunity because of the lack of capacity to prepare externally-financed projects. This also tends to leave decision-making in the hands of the donors rather than the recipients. Further, appropriate institutional mechanisms for channeling donor financing are necessary to enable efficient use of these resources. Where such institutional arrangements are lacking, this can constitute a much more severe constraint on investment in biodiversity than the potential availability of financing. Recognizing this

problem, some countries have established their own national environmental funds to deal with these challenges.

A national fund does not have to have an endowment nor does it have to be governed as a trust independent of the government (IUCN, 1993; 1994). The government of Bolivia established a national fund, named FONAMA, as a mechanism to coordinate donor support of environmental activities that inevitably cut across sectoral and ministerial lines. The government credits FONAMA with an increase in donor support for environmental programs in Bolivia. Donors responded to FONOMA because it offered an easier way to form multisectoral programs and to see how their funds were having an impact. Given their success with FONAMA, the Bolivian government is now seeking donor support to create an endowment for FONAMA so that it can begin to play the role of an in-country environmental donor, i.e., a foundation.

As discussed below under the heading of trust funds, the idea of a permanent, or very long-lived, source of support dedicated to environmental and conservation goals has arisen in a variety of ways. Donors have been one of the primary sources, including both bilateral sources and the Global Environmental Facility (through the GEF implementing agencies of the World Bank, UNDP and UNEP). Such funds are a good investment from a donor's viewpoint for a number of reasons. IUCN (1994) suggests that donors should support national funds because they:

- create a mechanism for long-term funding needs of environmental efforts which either require a long time to accomplish or need perpetual support;
- nurture democracy by empowering societies by providing independent analysis and open discussion of national policy issues and priorities;
- make career commitments attractive to future leaders by providing assurance that key institutions and priorities will receive steady support over the long term;
- stimulate responsibility (at the grassroots and at the national level) by providing an indigenous source of aid over which beneficiaries have greater control;
- break dependency on foreign aid by providing a source of funds under national management; and
- promote fiscal responsibility and good governance by creating a "foundation ethos" built upon explicit checks and balances which in turn create incentives for accountability.

IUCN surveyed the field of national funds, most of which have an endowment, in 1993, identifying more than 23 with assets in excess of US$350 million, mostly in local currencies (IUCN, 1994; Frothingham and Dillenbeck, 1994). Since this survey, the amounts have continued to grow and are expected to exceed US$500 million by the end of 1997. The Global Environment Facility has more than twenty endowments under discussion.

From a donors' perspective, endowed national funds meet a number of needs. Many donors, especially multilateral ones, are under steady pressure to support "sustainable development." While only a very broad consensus has been reached on what is "sustainable," most of the environmental NGOs and other groups agree that for development to be sustainable it must be participatory and democratic in the sense that societies are given more control over their own futures. National funds can provide a part of the answer to the sustainable development question (Dillenbeck, 1994).

Trust Funds

As debt-for-nature swaps became widespread, the proceeds of swaps in many cases greatly exceeded the availability of ready-to-start projects. Consequently, many swap arrangers sought to "bank" the swap's yield of local currency in interest bearing accounts and draw them down over a fairly long time, i.e., create a kind of sinking fund. At the same time, the GEF was being asked to develop new approaches to sustainable funding for their

biodiversity projects (Newcombe, 1995).

Around 1990 the idea of using these windfall amounts of money to endow a permanent trust or foundation that would fund biodiversity-related activities of NGOs as well as government agencies arose in separate instances. Trust funds have several advantages to some of the persistent problems in funding biodiversity projects. For instance:

- more diverse types of activities can be funded than is usually possible with more conventional mechanisms;
- long-term funding can be established and recurrent costs can be met;
- capacity-building is fostered;
- administration of small sums becomes more feasible, as financial flows are adapted to absorptive capacity; and
- co-financing possibilities are expanded and facilitated.

Osgood (1995) suggests that the bare minimum viable size of a trust fund is US$5 million, but a more realistic minimum size is US$10 million. The ideal is when the capital held by trust funds is invested in industries or other institutions whose operations are supportive of the objectives of the Convention on Biological Diversity.

In some countries, NGOs are playing a significant role in establishing national environment funds and small grant facilities that are based on the idea of fostering collaboration among donors, the government, NGOs and local communities. The intention is to empower local communities and support their initiatives based on the following assumptions in terms of roles and capacities:

- The appropriate role of government is to provide leadership while involving other partners in policy formulation and implementation.
- The track record of NGOs demonstrates that they can have a positive influence on policies and are effective at assisting local communities in the design and implementation of their initiatives; however, financial resources limit their effectiveness.
- Local communities have relevant indigenous knowledge, organization and manpower but lack financial means and sometimes technical know-how. They are the ultimate beneficiaries and should be the principal implementors of activities.

The traditional role of donors is to fund government initiatives, but increasingly they are also funding NGOs and community organizations based on priorities defined by the government.

Experience with endowments and trust funds (see Weatherly and Warnken, 1994; Mikitin and Osgood, 1994; Rubin *et al*., 1994; Spergel, 1993) indicates that creating a successful permanent it institution requires more attention to questions of governance than do time-limited projects. Governance issues are qualitatively different from typical project management issues. In a five-year project if a fundamental issue such as the lack of participation of a local population arises, an easy "out" often taken is to postpone addressing the issue until a follow-on project. Endowments have no follow-on so all fundamental issues need to be a part of the design process.

Endowments need forms of governance that local people consider legitimate. An example from recent events may serve to make the point. The Mexican biodiversity trust mentioned above will likely focus many of its activities in the tropical forests of Chiapas state, the scene of an armed rebellion of indigenous peoples seeking greater control over land and resources. The organizers of the trust face the difficult task of striking a balance between having enough representatives of the affected indigenous groups to be legitimate in local eyes, while still adequately representing national and global viewpoints.

Table 3
Advantages and Disadvantages of Various Kinds of Trusts

Trust	Advantages	Disadvantages
1. Domestic Trust	! Functions under laws of country of beneficiaries ! Builds domestic capacity in trust management and financial management ! Perception of national ownership can raise awareness of and build commitment to environmental issues ! Strengthens democracy by stimulating dialogue between NGOs and government	! Perception that funds belong to government and could be used for other government programs (avoided in the Bissau case) ! Political instability and corruption can threaten trust objectives and safety of assets ! Legal status may not meet requirements of outside nonprofit organizations ! Risk of devaluation of local currency (CFA zone)
2. Offshore Trust with Offshore Asset Management	! Investment in hard currency in a secure market and location ! Access to top professional asset managers ! Provides legal structure for countries where legal system does not accommodate a trust arrangement ! Increased donor confidence ! Ability to transfer assets to another location, if need be	! Risk of attachment; money could be legally seized by commercial creditors ! Lost opportunity to build domestic financial and asset management capabilities ! Lack of ownership, creates dependency ! Loss of control
3. Trust Based in a Multilateral Agency	! Tax-exempt status ! Absolute security of assets ! Protection from attachment ! Ability to place assets in a tax haven without negative perception sometimes associated with such a situation ! New potential: possibility to link fund capitalization to multilateral debt conversion	! Additional layer of administrative costs and delays ! Long-term involvement of outside agency ! Lost opportunity to build domestic capacity for asset management ! Fee arrangements and conservative investment practices can lower potential returns ! Loss of sense of national ownership and control

Other lessons learned include the need for explicit and robust checks and balances. The model for many trusts comes from developed countries where government and public interest groups have a long experience with a legal framework governing the management of these trusts or foundations. In countries without such a strong tradition, trust creators will have to construct a framework of incentives to good governance within the agreement with the government, that grants independence and tax privileges to the trust or foundation. Together, this framework of governance and the character of the foundation's staff and board members lay the groundwork for the growth of a foundation ethos.

One way to create an incentive to good governance lies in committing the trust or foundation to growth through fund-raising both from national and international sources. The foundation will only be successful in raising funds if it maintains a reputation of being effective and accountable. The four institutional approaches outlined above have their own advantages and disadvantages. As with funding mechanisms, these institutional approaches are indicative and will certainly require adaptation to local conditions and requirements. The main point is that the Convention on Biological Diversity provides new opportunities for innovative thinking about how to mobilize policy changes, funding, and public support for enabling people to live in balance with the available biological resources.

Policy Changes to Facilitate New Sources of Funding

This section suggests several policy changes that could facilitate new sources of funding in support of biodiversity.

Endow National Foundations

Key to the future of biodiversity financing is having a vehicle to build a national consensus on overall environmental priorities. Such institutions must have a broad mandate from civil society to be able to work with public sector agencies to set national goals for biodiversity as well as other environmental needs.

The concept of a national foundation as described in this paper would be to serve as a partner of green business by certifying the environmental and social benefits of businesses whose sales require customer (or investor) confidence. Further, a national fund patterned along the lines of *Fundación Chile* would be able to play a leading role in promoting sustainability by using its capital to create ventures that both make a profit and use resources in a responsible way.

Change Laws to Encourage Fund-Raising

The general public is often very interested in conserving biodiversity but lacks any effective means of demonstrating their preference, except perhaps through increased purchase of green products. But given appropriate structures, the general public will often be extremely generous in their support of conservation, especially through conservation-related NGOs. In order to tap this potential, governments and donors need to examine laws and regulations governing the activities of the nonprofit private sector. Partnerships with for-profit concerns should be encouraged and regulated. Tax breaks for charitable contributions need to be instituted or enhanced. The goal is to make the nonprofit sector as dynamic and innovative as the for-profit sector.

Build Institutional Capacity to Obtain Sustainable Income

Investors supporting biodiversity conservation need to commit to a ten- to fifteen-year program of building institutional capacity to support biodiversity conservation. The needs are broad. Examples include: more effective institutions to manage protected areas; institutions to certify green investments; laboratories to develop commercial drugs; and ways for indigenous peoples to participate in and benefit from decisions over the use of biologically diverse resources and their products.

Encourage Investment by the Private Sector

The private sector is often discouraged from investing in biodiversity because of high levels of market and political risk, high initial capital costs, returns that are earned in the distant future, and difficulties in implementing user charges due to high exclusion costs. Private investors need to be provided with appropriate incentives, such as security of tenure, appropriate contractual relations, the removal of perverse economic incentives, correction of distortionary policies and removal of barriers to entry.

Implement Full-Cost Pricing

One of the reasons that biological resources are overexploited is that the full costs of their exploitation are not reflected in their prices. In other words, the general public is subsidizing overconsumption of these resources, as the price signals of overexploitation are lost in the noise of marketing, subsidies and global trade. In order for the public to make informed choices, and for the market to play its appropriate role, prices must accurately reflect the full costs of exploitation. Thus governments should initiate a dialogue to ensure international agreement to full-cost pricing as a means of changing consumer behavior and thereby reducing pressure on biodiversity. While this would not necessarily raise funding directly for biodiversity conservation, it would be an effective indirect support which will mean that less funding is required.

Build Public Support for Biodiversity Conservation

Many of the policy changes and innovative funding mechanisms are built on public support, which will be forthcoming only if the public has a good understanding of the issues, costs and benefits. Public support for these measures will make them politically acceptable and increase the return (in terms of public approval ratings and consumer support) to sound and innovative environmental behavior by the private sector.

Incorporate a Funding Strategy in National Biodiversity Strategies and Plans

Article 6 of the CBD calls for the preparation of national strategies and action plans as well as the mobilization of national and international funding to support the objectives of the Convention. As an integral part of these plans, those preparing them should include a section on financing mechanisms to deal explicitly with the many opportunities suggested in this paper, and others which may be appropriate at the national level.

Conclusions: What the IDB Can Do

The main problem in financing biodiversity conservation is not just finding additional finance but identifying the most suitable and equitable economic instruments. Instruments that enable the full costs of exploitation to be included in prices would be especially important in conserving biodiversity. Such incorporation of full environmental costs into prices paid for commodities can have a profound effect on biodiversity. Meeting the two conditions of full-cost prices and not reducing the export earnings of developing countries could build on partnerships between producers and consumers of a given commodity, perhaps through informal commodity roundtables for internalization of costs or international environmental agreements on commodities.

More funds are required for supporting government efforts to implement the Convention on Biological Diversity. This paper has indicated the breadth of opportunities for innovative sources of funding, and the kinds of policy reforms required to enable the new funds to be effectively applied to biodiversity problems. The major requirements, and possible roles for the IDB are discussed below.

- **!** Requirement: Establish new policy frameworks that will facilitate innovation in fund-raising for biodiversity-related topics. *Possible IDB roles:*

* *Mainstream biodiversity concerns within the IDB's regular development operations, especially by promoting the creation of incentives for conservation of biodiversity and sustainable use of biological resources (including incentives related to property rights regimes and the creation of markets for biodiversity products).*

* *Develop and apply new approaches to financing conservation of biodiversity as part of conservation programs, including National Environmental Funds, economic and social incentive measures, etc.*

! Requirement: Reduce expenditures that tend to operate in ways contrary to the objectives of the CBD. *Possible IDB roles*:

* *Avoid establishment of perverse incentives; promote removal of such incentives where they exist; establish and implement environmental impact assessment and mitigation procedures that incorporate biodiversity concerns.*

! Requirement: Design new approaches for raising and spending money effectively for achieving the objectives of the CBD. *Possible IDB roles*:

* *Promote and develop approaches, methodologies and technologies for sustainable use of biological resources as part of conservation programs or other sectoral IDB operations, in association or independently from protection activities; develop a special focus on the role of biological diversity in contributing to sustainable development, including by promoting human well-being and helping to alleviate poverty.*

* *Include biodiversity issues into the IDB's sectoral planning and policy development processes, paying special attention to the biodiversity strategies and action plans developed to help implement the Convention on Biological Diversity.*

* *Encourage resource mobilization and leverage of additional resources to complement IDB loans and concessional grants; define plans to ensure financial sustainability especially in the ex-post phase of conservation programs.*

* *Ensure coordination between IDB conservation activities and other projects developed in the region (such as GEF projects) to avoid duplication and/or lack of coherence, and to promote complementarity between such projects; promote exchange of experience between these projects.*

! Requirement: Build capacity to use economic instruments to promote the conservation of biodiversity. *Possible IDB roles*:

* *Promote exchange of experience in the development and application of economic instruments, as well as of other activities within conservation programs, and communicate results to a broader audience.*

* *Increase capacity building in conservation programs, including strengthening institutions responsible for implementation of IDB programs and training programs for staff and relevant stakeholders.*

! Requirement: Build broader support for biodiversity conservation. *Possible IDB roles:*

* *Ensure broad participation from relevant stake-holders in conservation programs such as protected areas management and sustainable use and biodiversity protection programs outside such areas (including in their management and monitoring activities); ensure participation in biodiversity projects of governmental officials from environmental and other sectors such as finance, agriculture, forestry, tourism, and others, as well as NGOs, indigenous groups, and grassroot organizations.*

* *Ensure that programs that include biopros-pecting activities or other uses of genetic*

resources have procedures to ensure the involvement of owners of resources, as well as knowledge and prior informed consent from these owners, and arrangements for benefit sharing.

This paper has argued that conserving biodiversity requires a combination of policy reform and appropriate economic instruments. The policy reforms would remove the underlying causes of the loss of biodiversity and create incentives for the efficient use of biological resources. The economic instruments will further strengthen the incentives for behavior which is supportive of the objectives of the Convention on Biological Diversity and will generate the additional financial resources required to fund investments in biodiversity. The international policy environment established by the Conference of the Parties of the CBD will condition the outcome of national policy reforms as well as the incentives and revenues generated by the introduction of the economic instruments proposed.

Obviously, some innovative measures will be easier to implement than others. It would seem reasonable to start with policy options and financing instruments that promise win-win outcomes, followed by those that would raise at least sufficient revenue to be self-financing. Environmental investments that clearly involve net additional costs should be done last and in increments, with full assessment of the trade-offs involved. Finally, full-cost pricing may take 10 to 20 years to implement if the process were to be started today, but what counts is the effect of a commitment to full-cost pricing on the formation of expectations of investors, producers and consumers. Taken together, the policy changes, innovative funding mechanisms and expanded partnerships with the private sector will greatly enhance the prospects for implementing the Convention on Biological Diversity. The IDB can play a critical role in helping to design and implement this package of measures.

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Alternatives for Habitat Protection and Rural Income Generation

By Douglas Southgate[1]

Introduction

Humankind as a whole has an enormous stake in the preservation of rain forests and other species-rich habitats in Latin America. Converting such areas into cropland and pasture results in biodiversity loss on a grand scale as well as increased atmospheric concentrations of carbon dioxide and other greenhouse gases. Furthermore, people in many parts of the world feel their lives are enriched as wild lands in Latin America are saved from encroachment, irrespective of the narrowly utilitarian values that might be attached to avoiding species extinction or global warming.

International efforts to save natural ecosystems in the developing world, which date back more than a quarter century, originally centered on the establishment of national parks and reserves, of the sort found in the United States and other wealthy nations. Various limitations of this approach soon became apparent, however. By and large, the meager financial, technical and human resources available to governmental park services in poor countries fall short of what is needed for effective management, the control of encroachment and related tasks. Moreover, establishing nature reserves, where economic activities are proscribed entirely, tends to arouse the opposition of people living nearby.

Since park protection, pure and simple, has its limitations, interest has grown in finding ways to halt habitat destruction while simultaneously raising local standards of living. For example, the Eighth General Increase in the Financial Resources of the Inter-American Development Bank contains a call to take advantage of "opportunities to aid in the conservation of biological diversity," but also cautions that forest-dwellers must share in the "benefits of sustainable forest management" (IDB 1994). Likewise, the president of The Nature Conservancy, which is active throughout the Western Hemisphere, has stated that his organization is "concentrating more on strategies that address…the conservation issue of the 1990s: integrating economic growth with environmental protection." (Magreta 1995).

One way to reconcile habitat protection and local economic well-being is to promote economic activities that are both remunerative and environmentally benign. In a typical integrated conservation and development project (ICDP), for example, nature-based tourism, sustainable harvesting of forest products, or both are encouraged in a buffer zone surrounding an officially designated nature reserve. The intention is for people living in the area to give up lines of work such as agricultural land clearing, in favor of alternatives that create less environmental damage. Insofar as they make this switch, human pressure on renewable resources, in general, is reduced and encroachment on the park, in particular, is diminished.

ICDPs have been criticized on several grounds. For one thing, ecotourism and other preferred activities are not always environmentally benign. In addition, the roads and other improvements that are often needed for an ICDP to be successful also enhance the profitability of more depletive lines of work.

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Southgate and Clark (1993) point out that, where labor is underemployed, local populations can adopt ICDP activities without giving up what they were doing beforehand. For these and other reasons, Wells and Brandon (1992), who have evaluated twenty-three ICDPs in Africa, Asia, and Latin America, express doubts that parks and reserves can truly be saved by encouraging things like nature-based tourism or the sustainable harvesting of forest products in surrounding buffer zones. The same reservations are shared by Dixon and Sherman (1990) and other observers.

The IDB's Mandate

One way to reconcile habitat protection and local economic well-being is to promote economic activities that are both remunerative and environmentally benign. It has been suggested that nature-based tourism, the extraction of nontimber forest products, environmentally sound timber production and genetic prospecting might fit the criteria established by the Bank's mandate to assist in the conservation of biological diversity while protecting the rights of forest dwellers.

The key question the research sought to answer is whether those four activities truly represent a viable economic alternative in Latin America's environmentally fragile hinterlands. Several cases in each line of activity were analyzed to determine the level and distribution of the net returns they generate. Special attention was devoted to examining the degree to which net returns flow to local populations, as opposed to other economic agents. In general, examination of the rewards local populations can expect to derive from ecotourism and the harvesting of nontimber forest products suggests that allocating time and effort to those activities is unlikely to be very remunerative since unskilled labor is not particularly scarce in rural areas. In addition, little is to be gained by controlling access to natural resources, which for the most part are abundant. Moreover, making the sector-specific human capital and other investments needed for forest dwellers to capture more of the net returns from ecotourism, genetic prospecting, and so forth would probably not benefit them very much. Instead, furnishing them with education and training that is broadly applicable across the entire economy makes more sense.

Prospects in Four Areas of Activity

Four types of investments, each addressing one kind of economic activity often incorporated in ICDPs and similar projects, contain the report's core findings. The paper presents a qualitative discussion of the circumstances under which sustainable economic activities benefit local populations.

In the first type of investments, *nature-based tourism* in Costa Rica and the Galapagos Islands is examined. Both places have drawn large numbers of international visitors during the past ten to twenty years, and national economies have benefited substantially as a result. But aside from a very few places, like Monteverde (in the mountains of northern Costa Rica), local communities are gaining little from foreigners' visits to nearby parks and reserves. Also, they probably should not expect to benefit a great deal from raising park entrance fees and applying other financing mechanisms. The money raised by such measures is needed to shore up the environmental base for tourism's continued success. In addition, the elasticity of demand for access to most sites (the Galapagos and volcanic craters in Costa Rica being major exceptions) is high enough that opportunities for generating revenues by hiking entrance fees are limited.

Harvesting of *nontimber forest products* is the second topic. The movement to establish extractive reserves, dedicated to the production of forest fruits and nuts, latex, and other commodities, can be traced to the struggle of rubber tappers in the Brazilian Amazon to hold on to land, which they were losing to the expansion of cattle ranching in the region during the 1970s and 1980s. International environmentalists supported the movement, in part because of optimistic assessments of the commercial potential of nontimber extraction. Actual experience with that activity, though, indicates that there are various impediments to its economic and environmental success, including weak property rights, thin markets

and production outside of forest settings. Examination of nontimber extraction in western Ecuador reveals a general tendency toward meager financial returns for the households that engage in harvesting.

Looking at *environmentally sound timber production*, studies of various modes of timber harvesting and extraction in the eastern Amazon provide a clear picture of how logging evolves in frontier regions. They also yield the conclusion that sheer resource abundance discourages the sort of investment required for sustainable resource management. The latter is corroborated by experience gained in a sustainable forestry project carried out in the Peruvian Amazon with financial and technical support from the U.S. Agency for International Development.

Finally, a review of the empirical literature on the value of tropical forests as a source of *raw material for biomedical research* reveals that value estimates contained in earlier contributions to that literature are too high. The best available economic research suggests that the returns to genetic prospecting might be quite modest, particularly for forest dwellers. Those returns are almost certainly too small to justify the investment in property institutions required to establish efficient markets for genetic information collected in the wild.

Conclusions and Recommendations

Ecotourism, nontimber extraction, environmentally sound timber production and genetic prospecting can, under the right circumstances, contribute to biodiversity conservation and improved living standards in selected areas. In and of themselves, however, those activities cannot serve as a sound centerpiece for an integrated strategy for economic development and habitat conservation. Much more can be accomplished by raising crop and livestock yields, so that agricultural land clearing is no longer needed to satisfy increasing commodity demands. Of even greater importance is human capital formation, which reduces the number of people for whom converting natural ecosystems into marginal farmland is an attractive employment option. Available evidence suggests that a combination of agricultural intensification and human capital investment allows just about any country to raise material standards of living while keeping natural habitats intact. Indeed, achieving economic development through productivity-enhancing investment is probably the only way to protect biodiverse ecosystems in the developing world.

Because typical initiatives involve the application of limited amounts of technical assistance and financing in a fairly small area, promoting nature-based tourism and sustainable harvesting of forest products does not lend itself well to the sort of large-scale project that the IDB is accustomed to mounting.

A better role for the IDB, then, might be to address more fundamental causes of habitat loss resulting from economic development, or the lack of same. In particular, strengthening agricultural research and extension can raise crop and livestock yields. This allows for increasing demands for food to be satisfied without extensive encroachment on forests and other ecosystems. Human capital formation, especially in rural areas, is essential for reducing the number of poor people for whom tropical deforestation is the best among a limited number of low-paying employment options.

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Private Sector Investment in Biodiversity Conservation

by David Smith[1]

This paper examines the ways in which the private sector is becoming involved in biological conservation. Biodiversity protection has traditionally been the role of government. In many countries NGOs have begun to take the lead role. However, the direct involvement of the private sector has often been restricted to tourism and ecotourism. Indirectly, the private sector has been able to support conservation through contributions and support of NGOs and trust funds which support management or carry out management activities. There are several areas in which the private sector should be encouraged to become more involved in biodiversity conservation. Indeed, if conservation is not brought into the mainstream of the activities of relevant companies, it is unlikely that sustainable development will be achieved.

Cooperation between NGOs and the Private Sector

Cooperation between NGOs and the private sector is growing. The involvement of the sector varies from the provision of advice to the financing of NGO programs. While NGOs are often reluctant to be too closely involved with business, this is changing, and NGOs are becoming more sophisticated in finding ways to get private sector support.

Philanthropy

In the United States, the tax laws regarding donations, and a long culture of philanthropy has created a multibillion dollar industry. While many donations are from individuals, private businesses also contribute significant amounts, particularly through company foundations. The Nature Conservancy, a well-organized American NGO, has been able to manage this source of income extremely well. As a consequence, it has protected large areas of land in the United States and been able to support conservation of biodiversity in the Pacific, Latin America and the Caribbean.

Similarly, NGOs, such as World Wildlife Fund, Conservation International, the Center for Marine Conservation, and others, have also been able to mobilize resources from the private sector. The situation that exists in the United States is, however, a special case. Most other countries do not have the peculiar combination of prosperity, tax incentives and a philanthropic culture that exist in the United States.

Other ways in which the private sector supports conservation is by in-kind donations of goods or services, such as through the donation of an advertising slot to place environmental education material in the media, or the provision of office or field equipment.

Direct Involvement of the Private Sector

Ecotourism

Tourism has been the major way in which the private sector has affected conservation, and the traditional way in which protected areas have supported themselves, outside of government subventions. Its fast-growing component, ecotourism, has often been touted as the best way in which the private sector can be involved in conservation.

[1] David Smith is the Executive Director of the Jamaica Conservation and Development Trust.

Despite this, the experience in ecotourism can best be described as mixed. There are no effective industry standards and ecotourism as practiced, varies from good examples which protect resources to others which cause as many problems as they solve. The subject has been extensively reviewed by Ceballos-Lascurain (1996). To solve some of the problems, NGOs are beginning to work with tourism trade organizations and governments to develop guidelines and standards for the practice of ecotourism.

At minimum ecotourism should:

* cause a measurable increase in conservation effectiveness;

* provide a new source of net income for a protected area; and

* provide employment for local communities.

Marine Parks

Diving has traditionally been a sport with many opportunities for conservation of marine areas. Saba Marine Park in the Netherlands Antilles is a very good example of a private sector source of revenue being tapped to support a protected area. The fee that people pay to dive in the park is earmarked for park support. While not all costs are covered, the park is relatively free of the need to seek continual external support in the form of grants.

Biological Prospecting

The problems of biological prospecting are many. But it is an area where there is strong interest by the private sector, particularly pharmaceutical companies. The problem is to ensure that the revenue which may result from prospecting activities goes, at least partially, into supporting conservation. Many countries fear, with good reason, that the potential of plants or animals within their borders may be exploited by large foreign companies. As a result, ~~policy in this area in many biod~~iverse countries is little developed.

To establish an institution such as INBio, in Costa Rica, is probably the dream of many countries with high biodiversity. However, the high risks and relatively low success in biological prospecting relative to the cost required to start a program means that without external assistance many countries will not be able to implement one. Indeed, it can be argued that had it not been for extensive debt conversion programs to provide capital, INBio may not have been created.

Swaps and Trust Funds

Debt-for-nature swaps which result in the purchase of land are beginning to fade away in favor of those which endow environmental funds. While the bulk of funds has been from public sources, the private sector has been involved in swaps through donation of funds for debt purchase and by providing technical services to carry out the swap itself.

Watersheds and Catchment Areas

Since it is not always possible to motivate payment to conserve biological diversity *per se*, the protection of biologically diverse areas for their watershed value is becoming an increasingly important issue. If the U.N. prediction that the shortage of potable water will become the world's main environmental problem in the next century is correct, this may become a more pressing matter. Companies which provide water are often either government agencies or recently privatized agencies. Few, however, charge rates sufficiently high to pass on the cost of watershed protection to the consumer. As a result, watershed degradation becomes commonplace. As the trend towards privatization continues and as these companies grow, the trend must be reversed.

Hydroelectric power plants also have a vested interest in maintaining the quality of watersheds. New plants must be designed with a component that maintains the functioning of the watershed. This should be coupled with a pricing regime for the electricity produced that includes the cost of conservation of the watershed.

Loans for the development of hydro schemes should include a realistic component for watershed protection. Failure to do so will result in an inability to control the potential conversion of forested catchments into other land uses which often occurs as a direct result of bringing a new enterprise into an area.

The Soberania National Park protects a watershed important for the functioning of the Panama canal. Prior to its demarcation and the institution of agroforestry programs, the rate of deforestation was very high. While it has been reduced, there is a potential to increase the fraction of revenue from the canal that supports the protection program.

Cause Related Advertising

Commercial advertising campaigns can be used as a source of direct or indirect funds for conservation. A suitable conservation project can be used to market any company regardless of its mission. Logical tie-ins would include the support of the travel industry by credit card companies such as VISA and American Express, who have programs involving special cards as well as donations to protect the tourism product. However, any company can "ride the environmental bandwagon" and use pleasing images of a national park or a charismatic animal to sell any product from investment funds to photocopiers to paint.

These approaches have all been tried. The success of these campaigns depends on the skill of the advertisement copywriters and the visual and emotive impact of the cause. Fidelity Investments was able to support the conservation of tropical forests, as well as increase the number of their investors by providing funds for debt-for-nature conversions. The National Wildlife Foundation was able to generate funds from international sources through a licensing arrangement with Dannon yoghurt. These approaches will work as long as the company can be shown that the advertisements will be at least as good or better than their current campaign.

Public Sector Roles and Economic Policies Affecting Biodiversity Conservation in Latin America and the Caribbean

by Marc J. Dourojeanni[1]

Basic Public Sector Roles in Biodiversity Conservation

Biodiversity conservation is, essentially, a public responsibility. It was already recognized as such long before the modern concept of biological diversity became popularized. Throughout history, governments have taken measures to discover and conserve useful genetic resources to improve agriculture, animal husbandry, forestry and fisheries as well as for medicinal purposes, decoration, etc. Governments have also protected samples of nature as a reservoir for potentially useful wild species. The most notable example is the establishment of protected areas, which became popular after the United States government established Yellowstone National Park, more than a century ago, leading to the currently existing worldwide network of national systems of protected areas.

Biological resources are a public good which means they cannot be conserved without governmental control and support. This is especially true for the large segment of biodiversity with no current economic value. Currently, most biodiversity resources can only be viewed as an economic option, at best a future resource, which would not survive under the existing social and economic conditions. Governments are thus expected to provide an adequate policy framework, including legislation, partly based on international agreements with adequate national rules and standards, and supportive economic policies. Governments are also expected to allocate adequate funding to the public institutions responsible for law enforcement, research, management and, in general, to ensure the sustainable use of these resources. Of course, these expectations are based on theory and, in real life, most developing countries took only the first step of drafting legislation for biodiversity conservation but failed to establish any real policies and priorities, let alone the public budgets or financial mechanisms needed to implement the legislation. The principal exceptions are, to some extent, research and extension activities related to agricultural genetic resources, mostly *ex situ* conservation, and the national systems of protected areas or *in situ* conservation.

Economic Policies Affecting Biodiversity Conservation

The economic recovery of the countries of Latin America and the Caribbean (LAC) since the late eighties, and the simultaneous application of free market principles and related economic policies in LAC, are having mixed results with respect to the environment. In general, it is still too early to predict the final outcome. There are indications of positive environmental impacts, especially with regard to what is known as the "brown environment" with evident progress on urban and industry pollution abatement, reduction of energy waste, higher efficiency in the use of natural resources, and the increased recycling of materials, among other areas. There is also evidence that financial and institutional mechanisms to address pollution and urban

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New Roads in the Last Forests

Roads are essential to economic development. In Latin America, however, roads have been without exception, the main cause of deforestation and forest degradation. Consequently, roads are also the main threat to biodiversity.

During the so-called "lost decade of development" in Latin America (mostly the eighties), few roads were built or even maintained as the region faced a deep economic crisis. This period was, in relative terms, a moratorium for forests. Today, the economic recovery is allowing an unprecedented wave of road construction in forest areas in Central and South America. In Central America, roads are planned to link Guatemala's most populous zones to the Peten and to Belize. Also, a new road is being built in Belize which will link its northern region with Guatemala . The construction of the Pan-American Highway between Colombia and Panama, through the Darien forest is also being promoted, while several roads are being built in the Colombian Choco. In South America, most "trans-something" roads, such as the Trans-Amazon, the Trans-Chaco, the Trans-Pantanera are currently being rehabilitated and upgraded. In addition, several new interoceanic roads through the last patches of virgin Amazon are under execution and/or active consideration: in Bolivia (2; one through the Pantanal and Chaco-Amazon transition forest and the other in the Amazon forest), in Peru (4; all in Amazon forests) and in Ecuador (1). These new roads would link the Brazilian Atlantic coast with the Pacific coast. All of them are being promoted individually but simultaneously, mostly responding to specific local interests. Several would be associated with river navigation or railroads that are being built or improved. Other roads, such as the Marginal of the Jungle in Peru and the Perimetral Norte of Brazil, are also being completed or rehabilitated. Roads between Brazil and Venezuela, Suriname, Guyana and French Guyana are being constructed or paved. Another road, in this case between Venezuela and Guyana,, is also under consideration. Even the southern forests of Chile are under threat by the Austral Highway, new roads and related forestry developments in Tierra del Fuego.

In the past, most roads were financed multilaterally. Today, roads are increasingly financed by private investors, which means that governmental control on how these roads are planned, designed and built needs to be redefined. Sound development along the roads, their environmental impacts, indigenous peoples' rights and, obviously, deforestation, are not part of the immediate concerns of the private sector. Concerns raised in international circles had some impact on road construction that took place with multilateral financing (IBRD and IDB). With private financing, it is uncertain that an international outcry would have any impact on the construction of the roads mentioned above.

Sources: Newspaper reviews from 1995 - 1996 and several government publications

Box 1

environmental issues are being implemented. Furthermore, a significant and growing segment of the private sector recognizes the potential economic gains of promoting a healthier and safer environment.

However, it seems less evident that the recovery and liberalization of the region's economies are also, on average, benefitting the "green environment" (Reed, 1992).

The initial effect of the privatization of natural resources, such as forests and water, (Laarman, 1995) and of the drastic reduction in size and responsibilities of public institutions, combined with the increased economic stability and private capital investment availability, is an unprecedented assault on the continent's remaining wilderness, from Mexico's border with the United States to the Beagle Channel and beyond: new roads (see Box 1); new or improved waterways (see Box 2); new settlements and agriculture expansion; new hydroelectric dams; new oil exploration and exploitation and new pipelines; new irrigations; new natural forest (see Box 3) and fisheries exploitation ventures; new tourism centers; etc.

Most of these new developments have direct negative impacts on biodiversity because most of them are executed in areas that, until recently, used to be secure places for biological resources. Moreover, these developments have a negative impact on several protected areas, particularly because of biological isolation, exploitation and/or reduction of size, both from legal and from illegal activities.

It is fair to say that pollution control related to the urban environment and industry often has a positive impact on biodiversity. It is also true that the control of toxic residues in agricultural products under international trade regulations may be favorable to biodiversity conservation. However, such benefits are mostly indirect and are minimal compared to the previously indicated problems. In short, clearing natural forests to transform them into agricultural land is a biological disaster.

Waterways Under Study and/or Gradual Implementation

Waterways have been utilized in the LAC region since the early days of human settlement, and developers and policymakers have since been intent on improving water navigation in the Americas. However, the efforts to adapt the rivers to navigation have never been as serious as today. In August 1996, the President of Brazil announced priority investments in four waterways. Several other projects in a number of major waterways in Latin America are underway or under discussion: These are:

1. Orinoco-Meta Waterway (Venezuela, Colombia)
2. Paraguay-Paraná Waterway (Brazil, Bolivia, Paraguay, Uruguay and Argentina)
3. Madeira-Amazon Waterway (Brazil)
4. Tieté-Paraná Waterway (Brazil)
5. Araguaia-Tocantins Waterway (Brazil)
6. Improvement of the Panama Canal (Panama)
7. Nicaragua, Honduras and Mexico alternatives to the Panama Canal
8. Atrato´s alternative to the Panama Canal (Colombia)
9. La Plata-Amazon-Orinoco Waterway

Each of these projects may have very serious impacts on the biodiversity of wetlands, river ecosystems and marine ecosystems.

Sources: Newspaper reviews from 1995-1996 and several government publications.

Box 2

Increased deforestation and forest degradation are main indicators that the economic recovery and liberalization are not helping biodiversity. For the last several years, according to 1992 data, Latin America has shown the highest absolute level of deforestation among the developing regions of the world: 7.4 million hectares per year, versus 4.1 in Africa and 3.8 in Asia (WRI, 1992). Furthermore, recent research in Brazil demonstrates that after the dramatic decrease in the deforestation rate between 1978 and 1988 (2.11 million hectares per year, with a lowest rate in the season 1990-1991 of 1.13 million hectares), deforestation is again steadily increasing, and reached 1.49 million hectares per year between 1992 and 1994 (MCT/ INP, 1996). There are clear indications that this negative trend continued in 1995 and 1996, and together with recent information on forest degradation caused by logging, this confirms a dramatic increase in the deforestation rate (Unpublished, 1996).

Some new economic policies have or may have beneficial impacts on biodiversity conservation. In most cases, however, benefits to biodiversity are the

The Rush Against Forests

As natural forests in Asia and Africa are being depleted, large investors become more and more interested by the still large patches of natural forest of Latin America. Ludwig's Jari Florestal, in Brazil, was an early player but the number is steadily increasing throughout the region. Chile's southern forests followed, where the production of wood chips from the hardwood forests of Chiloe island, mostly for export to Japan, continues. In Tierra del Fuego, both in Chile and Argentina, foreign forest enterprises are also exploiting natural forests that are hard to regenerate, despite the great concern of scientists and NGOs. Suriname is considering three forest investments for concessions to enterprises covering around 3.5 million hectares, some 30% of the country's surface. The companies are from Malaysia, Indonesia and mainland China. The areas under consideration consist of 80% primary tropical forest and have an important population of Maroons and Amerindians. In Guyana, new concessions for four foreign companies, also from Malaysia and Indonesia, are currently being discussed with the government.

Large investors for logging operations are approaching several other countries, such as Venezuela, Peru, Brazil, Honduras, Panama, and Belize. Brazil recently enacted legislation that aims to prevent large portions of natural forests from falling in the hands of South-East Asian investors.

In all these cases, there only seems to be a small possibility that sustainable management will be practiced and the options for biodiversity conservation also seem to be very limited, although it is probably still better than in the case of forest conversion for agriculture or cattle ranching.

Box 3

result of unintentional side effects. For instance, the international trade rules requiring residual control for agricultural products achieved a rationalization of the use of agrochemicals in some exporting Latin American countries. Such was the case of Chilean fruit exports, which led to an indirect beneficial impact on biodiversity *in loco* and downstream.

Some economic policies deliberately address the issue of biodiversity conservation, such as the elimination of subsidies for investments that promoted deforestation in the Brazilian Amazon (Mahar, 1989). However, most such cases were of modest significance and short duration, or they were not fully implemented or even ignored. The significance of all economic policies with a positive impact on biodiversity conservation combined is minimal compared to other economic political decisions that were clearly negative.

Traditional Policies, Legislation, Planning and Institutional Practices Regarding Biodiversity Conservation

Policies

Lack of implementation has hindered the success of policy instruments in achieving biodiversity conservation. The main reason is that these kinds of policies are often advocated by only a small group: either a small and uninfluential sector of the government (such as those responsible for natural resources management), and/or a small segment of the national population (i.e., scientists and NGOs). They may also stem from outside pressures, including developed countries and international organizations. Because of the lack of general support, policies are forgotten as soon as they are approved. Illustrative examples of this situation are the ambitious Amazon policies developed in Brazil and Peru over the past 50 years.

Development policies that remain, for various reasons, unwritten are often followed much more vigorously than official governmental policies. Of course, unwritten policies are not always consistent with the official view of the international establishment and therefore cannot be openly revealed. Thus, the main challenge for the environmental sector is to demonstrate in international fora the pursuit of those unwritten development policies. Meanwhile, the policies that are unfavorable to the environment, especially to the "green" environment, continue to be applied.

Are there any exceptions? In other words, is it worthwhile to spend all the efforts in formulating sustainable

development policies? The answer is yes! There are some exceptions to the general situation described above that yield partial but encouraging results. The most notable exception is the decision in 1994 by the government of Costa Rica to develop and apply a national policy of sustainable development. Also, in 1994, the Central American countries signed the Alliance for Sustainable Development. In general, the countries of Central America have been much more active on environmental issues than the countries of South America, or the Caribbean region. However, it seems the initial enthusiasm for sustainable development in Costa Rica and other countries of the region is fading before any concrete results have been achieved. In South America, the government of Bolivia recently proclaimed its adherence to sustainable development principles, but this was mainly translated into the establishment of a Ministry of Sustainable Development, prior to the development of a comprehensive policy. These efforts, among others, are moving in a positive direction and certainly contribute to public awareness and education. Nevertheless, it is fair to say that general, sectoral or regional policies that favor biodiversity conservation are still mostly absent or, if present, rarely applied.

It is widely observed that policies that favor the green environment and biodiversity are rapidly overshadowed by other policies believed to have a higher priority. This is demonstrated by some recent developments in Brazil and Peru. As part of its policies to avoid deforestation and protect biodiversity, the Brazilian government recently strengthened a provision regarding the conservation of a certain percentage of forest reserves on privately owned farm land. On the other hand, however, the same government also strengthened the Agrarian Reform Program under which "unproductive" farm land in areas under social pressure are subject to expropriation for the settlement of landless farmers. These conflicting policies create a dilemma for landowners. Agreeing to the establishment of forest reserves would render the land to "unproductive", risking expropriation. To avoid this risk, landowners are currently deforesting and planting their farms as fast as possible, even if simultaneously they may be fined by the environmental authority for doing so (Padua, 1995). Another example is the pressure of mining and oil exploitation (Peru) or to settlement (Brazil) on protected areas. These pressures are felt as soon as the protected areas are established through a slow and difficult legislative process. A similar situation exists in the case of land owned and occupied by indigenous peoples, again in the cases of Peru and, more recently, Brazil. The latter country is currently reviewing the demarcation of Indian reserves and is considering allowing new private claims on these lands (Santilli, 1996). The result of all these actions is, of course, highly negative for biodiversity conservation.

Legislation

The subject of legislation with respect to biodiversity is wide and complex. In this section, four levels of legislation dealing with biodiversity are addressed: international agreements, constitutional, national, and state or provincial laws. Most Latin American and Caribbean countries are swift in signing new conventions directly or indirectly dealing with biodiversity, including agreements on: biological diversity, conservation of migratory species of wild animals, world heritage, international trade in endangered species of wild fauna and flora, wetlands of international importance, law of the seas, climate change, nature protection and wildlife preservation in the Western Hemisphere, among many other regional conventions (Nolet, 1995). However, a country's signature and ratification is by no means a warrant for effective implementation (Dourojeanni, 1994).

Constitutions in Latin America and the Caribbean are, by their very nature, general in character. However, several constitutions include the right of citizens to live in a safe environment, and some constitutions have specific additional provisions regarding biodiversity. For instance, the Brazilian Constitution contains a specific reference to the conservation of the Atlantic and Amazon forests, the Pantanal, and the Coastal zone as natural heritage. Nevertheless, practical experience in Brazil shows that using the Brazilian Constitution as a basis for obtaining resources to protect the biomass

or ecosystems does not provide additional leverage.[2]

Almost every country in the region has sectoral laws on protected areas, forests, wildlife, soil and water, fisheries, wetlands and even, specifically, biodiversity. Federal countries, such as Brazil, Argentina and Mexico, also have equivalent legislation at the state or provincial level, which usually has stricter norms than the national laws. The enforcement of these sectoral laws varies considerably within countries and institutions, depending on many elements, including the available capacity of the responsible institutions, changing political priorities, policies and governments. A common denominator is that laws dealing with "important" resources, such as water, are more strictly enforced than those dealing with "less important" resources, such as forests and fisheries, and much better enforced than those dealing with "unimportant" resources, such as biodiversity (including protected areas and wildlife protection). Another variable in a country's "green" enforcement level, is the state of the national economy. During periods of economic prosperity, more money is available to enforce laws that affect "unimportant" resources. However, in times of economic crisis, the first cuts affect protected areas and wildlife, and in times of depression, forest and fisheries law enforcement is discontinued, often through a process of so-called "deregulation" and arguing that these laws are "obstacles to development."[3]

Strategies, Planning and Zoning

The problems that affect the policies described above also apply to governmental planning for the "green environment." Examples of this are the National Forestry Action Plans developed under the Tropical Forest Action Plan promoted by FAO, with the participation of many international agencies. The plans, often of high quality, were made with a reasonable public participation effort, which is remarkable considering that in those years participation was not as commonly accepted by governmental agencies as it is today. However, the action plans were never implemented. Frequently, the teams responsible for preparing the action plans were invited by ministers who congratulated their excellent work. Afterwards, the plans received some publicity and… that was it. Again, a lack of political priority caused the initiative to fade away. And, despite being prepared with active public participation, newer versions of the National Forestry Action Plans are mostly following in the same footsteps.

Ecological zoning, or economic-ecological or agro-ecological zoning (among many equivalent names), has been practiced in the continent for at least the last three decades. Before the eighties, zoning was applied on a small scale in most settlement plans in the Amazon. The best known and most advanced zoning took place in Rondonia and Northern Mato Grosso during the mid-eighties, followed by other efforts in most of the Brazilian Amazon as well as in the Amazon region of other countries, such as Peru, Ecuador, Bolivia and Venezuela. The Rondonia zoning is part of the famous POLONOROESTE program of the IBRD and seemed to function well in its initial phase. The stage of creating colored maps to compare potential land uses with present uses and guiding future uses was surmounted. Discussions on economic strategies in each zone were carried out with a relatively high level of participation of the affected population, and, at a later stage, a state law established zoning as a guiding principle for sustainable development. However, shortly after the law was passed, changes in the government, a growing weakness of the public institutions and economic difficulties, allowed political and private interests to disregard the zoning provisions. In an effort to rectify this, a new zoning program was developed but this second effort was even less effective than the first one. Today, Rondonia is being "developed" in the anarchical way common throughout the Amazon and only protected areas may have a

[2] An example of this is provided by the lack of support of the federal government of Brazil for the Pantanal Project promoted by the states of Mato Grosso and Mato Grosso do Sul . The federal government argues that the states are in a poor financial condition to develop such a project but would not provide them economic assistance to develop an operation which may be the last opportunity to save the largest wetland in the world, one that is recognized as national heritage in the country's constitution.

[3] President Samper, of Colombia, eliminated the requirement of environmental assessments for several areas under development arguing that some of the articles of the law were retarding economic growth.

chance to escape deforestation.

Coastal zoning for watershed management programs and other tools for conservation of natural resources have been developed in several countries. There are some cases of successful implementation, albeit for only a period of time. The best examples of effective coastal zoning programs are in Belize, the Cayman Islands, Saba (The Netherlands Antilles), and to a limited extent Mexico and Costa Rica. The most enduring experience has been in Belize. However, as in the case of ecological zoning, there are only a few local experiences that endured for longer than a decade or so. In most countries (Mexico, Costa Rica, Ecuador and Brazil), coastal zoning is facing the problem of actual implementation. Watershed management is, in theory, being practiced in almost every country in the region, but, as with all other ecological zoning efforts, is poorly implemented over a reasonable period of time. Small scale experiences are usually much more successful, especially when there is strong local participation and the project has very long planning horizons (watershed management in Cajamarca, Peru, is a good example). In this context, any possibility of developing the ideal of bioregional management seems very small (Miller, 1996).

National biodiversity strategies are relatively new in the continent. Efforts aimed at developing a national strategy have been undertaken in Costa Rica, Mexico and Chile. All three are related to the Biodiversity Convention but none of them can yet be called a strategy (WRI, 1995). It is too early to assess whether these efforts will be successful in improving the conservation and sustainable use of biological resources.

Institutions

The main characteristic of public institutions involved in biodiversity conservation is instability and inconsistency in the quality and efficiency of the services they provide. The efficiency of most institutions working in biodiversity conservation (i.e., forest, wildlife and park services) has decreased over the last two decades, with their heyday back in the sixties and seventies, before the "lost decade of development." Most protected areas of the continent were established before this decade and enjoyed a relatively effective management and protection. However, budgetary cuts linked to the economic crisis have turned these institutions into mostly decorative ones. The current period of economic recovery with a strongly promoted process of modernization of the state and a heavy focus on a reduction of its size, is not contributing to an improvement of the quality of these institutions. Biodiversity conservation must be carried out in the field and this makes it difficult to reduce the number of staff members. But this seems hard to understand for those in charge of downsizing the state.

Despite the general negative tendencies described above, a very positive development for biodiversity conservation has been the establishment of state, provincial and, in some cases, municipal environmental authorities. Federal countries seem to have benefitted more from this development than unitarian states. Of the federal countries, Brazil provides the most interesting example in which the federal organizational structure for environment management is replicated at every state level and even in some major municipalities. This organizational structure includes a lead authority (minister and secretaries or under secretaries of state), an executive environmental agency (the IBAMA and institutes, foundations or others at state level) and an environmental council (the CONAMA and equivalent bodies in the states, always with strong participation of NGOs and scientists). Although not all state authorities function well, several of them have obtained outstanding achievements. As far as duplication of this model in Latin America is concerned, it should be noted that each Brazilian state is larger than most countries of Latin America.

Examples Of Successful or Potentially Successful Cases of Public Action for Biodiversity Conservation in the Region

Participation

The most important positive factor in biodiversity conservation is considered to be increased public participation in environmental management. The governments of the region increasingly allow and

support public participation. In every successful case, there is an element of participation of local people or affected populations. It is also remarkable that the degree of participation already achieved in countries such as Brazil seems to have become permanent. However, successful participation should not be confused with renunciation of the law, or of elected and representative authority. Neither should environmentally damaging results be justified solely on the basis of a democratic process when the expected benefits are in excess of the capacity of the resources. Participation should not be simply a mechanism to allow people to do what they desire, but to allow them to do what is needed for long-term the welfare of the majority.

The mechanisms accepted or proposed by governments to allow participation are numerous, varying with the purpose of participation. The most common mechanisms are:

* participation of NGO representatives in national, state or municipal environmental councils or committees;

* participation of affected populations and NGOs in the review of environmental impact assessments;

* participation of affected populations and/or NGOs in project and program preparation and execution;

* participation of NGOs in national, regional, state or municipal environmental funds; and

* participation of local populations and NGOs in the discussion of management plans for protected areas.

Another new trend, related with public participation, is the development of partnerships between governments, NGOs, universities and scientific institutions to manage protected areas. These partnerships usually consist of delegating a portion of the government's authority to a respected NGO to manage a national protected area, under clear conditions that do not preclude the general responsibility of the government in the area. In most of these cases, NGOs provide the management funds because the governments are not financially able to do so. Some good examples can be found in Peru, Bahamas and Brazil. For example, the Peruvian Foundation for Conservation of Nature is managing 11 protected areas under an agreement with the environmental authority and providing support to other areas, covering more than 5 million hectares. As a result, eighty rangers and 26 Foundation professionals are currently working in the Peruvian System of Protected Areas, with funding mostly from The Nature Conservancy and World Wildlife Fund (Suarez de Freitas, 1995). The Bahamas National Trust, an NGO created by law with quasi-governmental characteristics, was granted ownership of the national parks and the administration of the Heritage Fund covering part of the management expenditures (Holowesko, 1995). In Brazil, two important protected areas are entirely managed by NGOs. The first is the Serra da Capivara National Park, in Piaui State, managed by the *Fundaçao Homen Americano*, with international financing (mostly IDB funding in recent years). The second is the Grande Sertao Veredas National Park, in Minas Gerais State, managed by FUNATURA, with funding from a debt swap organized by the government, The Nature Conservancy and FUNATURA.

The cases of Peru and Brazil, together with many others are not exemplary instances of cooperation between NGOs and the government. The cooperation essentially stems from the environmental authorities failing to fulfil their basic responsibilities regarding the management of national protected areas because they place a higher priority on other areas, sometimes undertaken by the same agency. For instance, rather than maintaining protected areas, the environmental agency may finance forest product research, organize expensive international meetings on seemingly irrelevant issues, or develop useless forest inventories. The NGOs are taking over the basic responsibilities of the government: saving protected areas from total abandonment. It should be noted that the case of Bahamas is much more constructive. In any case, these three examples show that governments are at least willing to accept NGO participation, something which would have been difficult to imagine only a decade ago.

Establishment of Special Funds

A second major positive development in biodiversity conservation is the establishment of a wide variety of special funds in most countries in the region. Although none of them is very large in financial terms, they are key to the survival of representative samples of ecosystems and species throughout the continent. An essential character of these funds is that almost all were established by governmental initiative or, at least, with governmental support. Environmental funds have been established in as many as 20 countries in the region, most of them after the 1992 Rio Conference on Environment and Development. These countries are: Argentina (2 national funds and 1 provincial fund), Bahamas, Belize, Bolivia, Brazil (3 national funds, 2 state funds and 1 private fund), Costa Rica (3 national funds and 1 local), Chile, Colombia, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Peru (2 funds), Dominican Republic and Uruguay (Ecofondo, 1996).

Several of these funds were not only created very recently but they are also very small, and a number are still not in operation. Only a few of them are financially self-sustaining in the long term, largely because most funds were established only recently through donations of the Enterprise of the Americas or with GEF seed funding. However, some are already remarkably successful and others have enormous potential. The oldest biodiversity conservation fund in Latin America and the Caribbean is the National Parks Foundation of Costa Rica (1979). Another fund established more than a decade ago is the Bahamas Heritage Fund (1985), followed by the National Environment Fund (FNMA) of Brazil (1989). The Bahamas Heritage Fund is designed as an endowment or perpetual source of interest income for the Bahamas National Trust. The fund, currently around US$4 million, contributes approximately US$270,000 to the trust's annual budget.

Other funds, such as the Brazilian FNMA, are sustained by the national budget, or are fueled by taxes or fees. Two of the Costa Rican funds (The National Parks Fund and the Forest Fund) raise revenues through the collection of fees. (see Box 4).

In some cases, previously established funds were expanded to include environmental activities. Such is the case of the "Regalias" National Fund of Colombia. Under a provision of the 1991 Colombian Constitution, the fund was made responsible for environmental activities. Specifically, new legislation enacted in 1994 stipulated that 21.75% of the fund's money should be allocated to environmental fund's activities. In absolute terms, this could be around US$25.5 in 1995 and US$40.7 in 1998. An additional 10% of this fund has been allocated to the Corporacion Rio Grande de la Magdalena, mostly for environmental affairs.

Several of the funds specialize in protected areas. This is the case of the funds in Costa Rica, Peru and Bahamas. Other funds may provide resources for biodiversity conservation at the state or provincial level (Argentina and Brazil). Recently, after the initial success of Bolivia`s National Environmental Fund, the Global Environment Facility supported several of these funds (i.e., in Peru) as a way to provide sustainability to biodiversity conservation financing. The government of Peru is currently implementing the Trust Fund for Conservation of Peru's Parks and Protected Areas (PROFONAMPE) with GEF support. The annual revenue of the trust fund will initially finance management activities for three key protected areas (Manu National Park and Biosphere Reserve, Noroeste Biosphere Reserve and Rio Abiseo National Park). As the fund grows through new contributions, more protected areas will be included on the basis of priorities established by a master plan for the National Protected Areas System (FONAMPE).

Some funds began successfully but are now facing difficulties. The National Environmental Fund (FONAMA) of Bolivia was established by the government in 1990 to capture and manage funds to protect Bolivia's biodiversity. In its first year, FONAMA collected US$30 million. This fund was very successful during some time and, among other positive changes, it allowed NGOs to participate in the planning process. However, since 1993 FONAMA has become increasingly susceptible to political involvement in its management and has lost its autonomy. It is now under the authority of a second rank secretariat within the Ministry of Sustainable

Development

Debt Swaps

Debt-for-nature swaps are a well-known instrument that have been employed successfully in Costa Rica, Ecuador, Bolivia and even, in one case, in Brazil. By 1989, Costa Rica had already made swaps for a total amount of US$68.5 (Sevilla et al., 1992). However, the potential importance of debt swaps was greatly reduced by the economic recovery of most Latin American countries which made debt swaps less attractive. During the period that these instruments were being promoted, most governments were reluctant to allow the swaps arguing that a generalization of this practice would have inflationary consequences. Other governments were against debt swaps for reasons of sovereignty, mostly due to a misunderstanding of their real meaning. It was not always recognized that the land purchased was always to be administered by the country's environmental authority. In most cases, the swap only entailed an obligation to fund the management of already existing national protected areas. This is the case of the debt swap used to finance the management of the Grande Sertao Veredas National Park by FUNATURA, in Brazil.

The Green Protocol of Brazil

As is known, the U.S. Law that requires the U.S. directors on the boards of multilateral development financial institutions to abstain from voting in favor of projects for which an environmental assessment was not submitted 120 days prior to board consideration (the Pelosi Amendment), has been instrumental in implementing the environmental policies of the multilateral development banks (MDBs). The resulting changes were rapid and impressive and also triggered essential changes in the borrowing countries. As the requirement of environmental assessments became unavoidable, the need for monitoring and evaluating their implementation also became evident. This supported the work of national or subnational environmental agencies. In those case where these agencies did not yet exist, the process led to the establishment of environmental units in executing agencies, such as ministries of transportation, energy, urban development, etc.

Since loans were increasingly being implemented through intermediary financial institutions, the MDBs had to transfer environmental responsibilities and conditionalities to these institutions. For example, in 1986 the IBRD requested that the *Banco Nacional de Desenvolvimento Econômico e Social* (BNDES) of Brazil establish environmental procedures and an environmental unit as part of a loan. Since then, this important bank has allocated more than a billion U.S. dollars to finance environmental projects, mostly pollution abatement. Later, the IDB also requested that the Banco do Nordeste (BNB) of Brazil establish procedures and a specialized unit to handle a large IDB-financed tourism development project. Similar situations occurred with other public banks and, in 1995, after a careful study, all federal public financial institutions in Brazil decided to establish environmental procedures, units and credit lines for the environment. No loan would be granted without fulfillment of federal and state environmental legislations and only borrowers not included in the national "dirty list" of environmental violators, as established by the national environmental authority, could receive loans. Considering that the five federal banks allocate US$22 billion a year, this initiative is obviously very significant and will result in major changes, once fully implemented. The federal banks have invited the private banks to follow their example.

Although the banks' activities may be more relevant to issues of "brown environment" than "green environment," this new protocol could improve green environmental components in projects involving agriculture, silviculture or tourism. An example is provided by the Program of Tourism Development in the Northeast, financed by the IDB through the BNB, in which several important new protected areas are being established.

Budgetary Benefits for Municipalities with Protected Areas

Two Brazilian states are providing, through the annual state budget, financial compensation to municipalities affected by the existence in their territories of protected

areas that reduce their opportunities for economic development. Laws for this purpose have been passed in Paraná State (1992) and in Sâo Paulo State (1994). This may provide an important incentive for biodiversity conservation at the municipal level.

Tax Benefits for NGOs

In the past, Latin American NGOs have benefitted from tax privileges to develop their activities. These advantages included tax exemptions (i.e., for vehicles and equipment in general) and income tax deductions for individual or corporate donors for as high as twice the amount of the donations. During the seventies and especially the eighties, these benefits were gradually reduced. Currently, there are almost no tax benefits for NGOs. This is essentially a result of political considerations. In the past, NGOs were mostly traditional charitable institutions that did not interfere with politics. But since the seventies, a new type of social and environmental NGOs has spread throughout the continent, and several of the advocacy groups among them have confronted governments. The governments reacted by cutting all benefits and implementing relatively severe controls on the use of the funds that NGOs receive or collect. Despite the resurgence of democracy in the region, the situation is not improving. In fact, in countries such as Peru and even in Brazil, there are numerous initiatives concerning even stricter controls on NGO funding and expenditures.

In this light, it seems important to recall the enormous comparative advantages NGOs have in dealing with biodiversity which would be clearly enhanced if they could benefit from tax incentives for private and corporative donations.

Percentage of Large Infrastructure Investments Applied to Protected Areas

Since 1987, Brazil's CONAMA has requested that public and private enterprises constructing large scale infrastructure works that cause significant environmental impacts, compensate for the damages by establishing an ecological station (a protected area). In 1996, CONAMA reiterated this requirement, adding that the costs of establishment should be covered by the responsible company in an amount of at least 0.5% of the total cost of the infrastructure investment. Some states, such as Sao Paulo, require a 1% contribution for this purpose.

The protected area needs to be established according to the conditions established by the environmental authority. Following its creation, the area is transferred to the environmental authority. Several protected areas have already been established this way, following to some extent the kind of conditionalities the IBRD has used in some of the hydroelectric projects it financed in Brazil and other countries. The IDB has applied similar conditions for financing of road constructions.

Fees on Exploitation of Biological Resources

Most LAC countries collect fees for timber, fisheries and wildlife, as well as entrance fees for protected areas. These fees are usually very small, unrelated to the value of the exploited resources, poorly collected, and rarely allocated by the authorities for the conservation of the ecosystems that provide the goods or services. Stumpage fees collected in the Amazon portion of the Andean countries are often used to plant eucalyptus or pine trees in the mountains or to develop "enrichment" plantations which are often abandoned soon after planting. However, if effectively collected and used, these fees could be a powerful instrument for financing biodiversity conservation. From the mid-seventies to the mid-eighties, the Brazilian government used resources from the Forest Reposition Fund (stumpage fees) to purchase about 2 million hectares of land for national parks.

Land Taxation Benefits for Private Natural Reserves

The Brazilian government recognizes the establishmentof private reserves and procedures for doing so are relatively simple. However, the owner is required to make the decision irreversible. Establishment of a private natural reserve does not result in any change in land ownership. The owner remains free to sell the land, but the area must be

maintained as a reserve by the new owners.

Private reserves are exempted from federal taxes on land. Since this tax is still very low in Brazil (and poorly enforced), the main reason for the relative success of the private reserves seems to be that it offers landowners a safeguard against invasions by landless farmers and against the menace of agrarian reform. There are currently more than 100 private reserves in Brazil, covering about 700,000 hectares. An increase in land taxes and enforcement would provide an even greater incentive to establish private reserves.

Watershed Conservation Through Tariffs

Water or energy tariffs are a valuable option for conserving biodiversity in watersheds producing water or water-generated energy for cities, industries or agriculture. Currently, tariffs usually only cover the costs of water distribution and energy generation and distribution, but do not include watershed management costs. Utilities and governments tend to consider watersheds and watershed management a free gift from nature and from the people living in the watershed. To protect watersheds, restrictive land use regulations are often passed, increasing living and production costs for watershed inhabitants, without providing any compensation to them despite the fact that they generally do not share in the benefits which accrue downstream. Most attempts to enact legislation on this matter are confronted with strong opposition from utility managers, users of water and energy, and the policymakers who support these groups (Aylward et al., 1995). There are exceptions, however. In Colombia, 6% of the hydroelectricity tariffs are allocated to the environmental management of watersheds. In some reported cases, the beneficiaries themselves decided to contribute to the conservation of the watersheds.

Frequently, protected areas are important providers of high quality water sold at high prices, while there is no money made available to manage the protected areas (Acreman et al., 1995). A good example is the Brasilia National Park, the source of 80% of the water consumed in downtown Brasilia. The company in charge of the management and distribution of water in the Federal District collects around US$31 million annually from this source. Yet, no resources are allocated to the management of the park which has been practically abandoned for many years.

The Colombian Environmental Tax on Property

The Colombian Political Constitution of 1991 recognizes the link between land ownership and the environment, and states that a percentage of the property taxes collected by municipalities should be used to finance conservation and management of natural renewable resources, in accordance with plans developed jointly by the environmental authority and the municipalities. The law of 1993 regulating this constitutional provision established that the environmental percentage should be between 15% and 25.9% of the total property tax. Assuming that municipal authorities would apply the minimum tax, the available financial resources to use in environmental activities in 1995 are estimated to be US$45.2 (Rodriguez et al., 1995).

Multilateral and Bilateral Funding

For the purposes of this paper, government willingness to accept technical cooperation (and, in particular, loans from financial institutions or “donors”) for biological resource conservation should be recognized, to some extent, as acts of good will. Some governments have systematically rejected any borrowing for biodiversity conservation and have, reluctantly, accepted grants only when they did not compete with other priorities. Many governments, especially after the U.N. Conference on Environment and Development of 1992, also decided unofficially that biodiversity should be financed exclusively with grant resources. They even made marked reductions in national budget contributions to agencies responsible for biodiversity. In such cases, the green environmental conditionalities of MDB lending are the only opening for investing in biodiversity.

It is not easy to determine the exact amount being invested (as loans or grants) in the region for biodiversity conservation. It is even difficult to clearly

identify biodiversity components in environmental investments. Investments such as transportation, energy, agriculture or urban projects, often have important biodiversity-related aspects that may be hard to identify because they are spread out over several project components that may appear to be unrelated to biodiversity. In 1994, the IBRD conducted a survey of biodiversity conservation funding in LAC, registering well over 330 projects or project components (The World Bank, 1994). A comparative review of the survey and IDB information showed that less than 20% of the Bank's projects under execution were included in the survey (IDB, 1996). The annual amount dedicated to biodiversity conservation is even more difficult to assess, as most projects are developed over several years, annual disbursements often depend on several factors and may correspond to local counterpart funding which should also be taken into consideration (although it is accounted for in the national budget). It is estimated that U.S.-based efforts in 1987 (excluding all international organizations based in the U.S. such as the IBRD and the IDB) to research and conserve biological diversity totaled US$22.9 million in 58 projects. The six countries receiving the most resources were all from LAC, with Costa Rica receiving the largest amount of money (US$5.8 million) (Abramovitz, 1989).

It is difficult to estimate how much of the US$5.7 billion lent by the IDB for environmental projects (mostly brown environment) from 1990 to 1995, has indirect positive impacts on biodiversity conservation. It is also unknown how much of the nearly US$1.5 billion provided for environmental components in nonenvironmental projects (mostly for infrastructure) have a positive impact on biodiversity. To determine this, it is necessary to add part of the US$100 million provided between 1990 and 1995 in the form of environmental technical cooperations and small projects that supported biodiversity conservation. In 1994, the IDB published a partial assessment of the direct impact of its resources, estimating that US$65.1 million were allocated to five projects directly related to biodiversity conservation, and that US$13.8 million went to technical cooperations directly related to biodiversity.

Private Farms Forest Reserves Requirements

A few countries, in particular Brazil and Peru, have legislation that requires landowners to maintain a certain percentage of their farms under natural vegetation cover. This percentage of land is in addition to other land use restrictions, such as mountainous landscapes or riparian vegetation. Consequently, these reserves cover large tracts of fertile or potentially fertile soils for agriculture in some farms, even if many landowners select the worst part of the property to establish the legal reserve.

In Peru, the forest reserves law is poorly enforced. Brazil's Forestry Code of 1965, which established a legal reserve of 50% in the Amazon and of 20% in the Cerrado and other regions of the country, seems to have been implemented to some extent, although no formal evaluation has been made of its 30 years of application. As most of the people who complied with the law own large estates which are intensive agriculture, there are still significant preserved areas in the farming regions opened since the late sixties. In 1996, a revision of the 1965 law made it even more restrictive to deforestation, requiring that for new farms still covered by forest, at least 80% of the land should remain forested. To establish a legal reserve, it must be declared and registered and when the property is sold or divided, the legal reserve must be respected. The owner is allowed to manage and use the legal reserve, provided this is done without clear-cutting.

A very interesting development of the forest legal reserve is the approach followed by most large reforestation companies in Brazil (Aracruz, Veracruz, Champion, Klabim, etc.). These companies plant eucalyptus or pines but protect all remaining natural vegetation they find as legal reserves, and establish wide preservation areas in valleys with plantation forests in the surrounding plateaus. Some companies are even purchasing large patches of natural or seminatural forests for conservation purposes, even

when located in flat, fertile soils.[4] In this way, the hydrological system is entirely protected, surrounded by plantation forests that act as buffer zones. Biological corridors are maintained and, as new studies are showing, biodiversity has a good opportunity to be conserved.

As described above, since the revamping of the agrarian reform policy in Brazil, there is a growing conflict between the legal reserve legislation and the concept of "unproductive land" for settling of landless farmers, a top priority for the new Ministry of Agrarian Reform. This situation is contributing to the unprecedented rate of deforestation of legal reserves in order to avoid expropriation.

Fishing Licenses in Mato Grosso, Brazil

Until 1995, sport fishing licenses were sold exclusively by the Bank of Brazil, a large federal bank. This forced fishermen, often visiting from far away, to spend their valuable time obtaining the licenses in crowded bank agencies with long lines and always located in places without parking facilities. Not surprisingly, many fishermen preferred to risk a fine than to spend all this time. In early 1996, the environmental authority agreed to sell fishing licenses in stores, hotels and other more accessible places. The success of this new approach has been great, licensing was doubled in just a few months.

Environmental Initiatives in the Judicial System

Colombia and Brazil, among other countries, have seen important new openings for environment in their legal systems. The so-called *tutela* and popular actions contained in the Colombian Constitution and Civil Code respectively, were revamped through the new National Constitution of 1991 and since then have been effectively used to oppose decisions of public and private origin that may be negative to the environment (Tietenberg, 1996). Similar legislation exists in Brazil where, in addition, the *Ministerio Público* acts as the main plaintiff and defender of the environment, even without public complaints.

Reserves for Ecotourism

In the mid-seventies, the Peruvian government established the policy of allowing private tourism companies to manage relatively important patches of wildlands for ecotourism purposes. The land, in such cases, is not owned by the company but is given under concession for a very long period of time with the management practices and resulting conservation under the supervision of the forest service. Several of these reserves, some of them as large as 5,000 hectares, can be found in the Madre de Dios Department, in the Southern Amazon of Peru.

Chile is now considering a similar policy, but with ecotourism concessions inside protected areas. The government is soliciting bidding proposals for six selected protected areas (mostly national parks) for purposes of ecotourism. The idea is to grant the six concessions for 30 years to those entities that present the best management plans.

The Peruvian experience has been very successful for biodiversity conservation because the tourist reserves are in addition to the national public protected areas system, preserving land that otherwise would be devoted to logging or agriculture. The Chilean proposal is entirely different as it deals with already protected areas. It is also highly risky as the primary business of ecotourism is to make money rather than to conserve biodiversity beyond what is needed to attract tourists.

INBio and Similar Ventures

INBio (National Institute of Biodiversity) is a private nonprofit institution in Costa Rica established in 1988 to conserve the biodiversity of the nation's wildlands through nondamaging uses, with a commitment to generating income from biodiversity to cover wildland biodiversity management costs and to boost the country`s GNP. Although INBio is a private institution, it would not exist without the initial support of the

[4] The Veracruz Florestal was established in Bahia and contains a 6,070 hectares of Atlantic Forest reserve, linked with the protected forests in all valleys of the property and surrounded by 96,000 hectares of eucalyptus.

Ministry of Natural Resources, Energy and Mines (MIRENEM) and the country`s President. The commission that studied its establishment was created by presidential decree and was composed of seven representatives from public institutions and only two representatives from NGOs. Nevertheless, the commission advised, and the government accepted that the new institute would become private. It should be noted, however, that the governmental agencies are well represented in the 16 member board (Gamez et al., 1993).

Several other governments (in Central America, Mexico and Brazil, among others) are carefully following INBio's successful work and looking at adapting this model to their own realities.

Conclusions

- In general terms, economic policies being applied in LAC are having an indirect negative impact on biological resources. This is largely due to the economic recovery, which has led to an unprecedented wave of new investments, especially in integration and energy infrastructure, but also in forestry, tourism, agriculture and fisheries. It is also partly due to the effort to transform the public sector into smaller but more efficient institutions. Public agencies are being downsized, including environmental agencies that are already below their staffing needs. However, downsizing is not leading to efficiency gains as salaries, working conditions and equipment continue to be as insufficient as in the recent past. Moreover, deregulation is often taken to an extreme, creating a vacuum of authority.

- A few economic policies have unintentionally indirect positive results for biodiversity conservation. These are mostly related to urban and industrial pollution and the use of agrochemicals in exported agricultural products.

- When governments develop specific regional or sectoral policies, legislation, strategies or plans for sustainable development, they are usually not implemented or enforced, even when prepared with public participation. Instead, the same traditional economic development policies continue to be practiced. There are, however, a few exceptions such as Costa Rica. The value of the Costa Rican experience as an education and informative tool should be taken into consideration. Expensive economic and ecological zoning programs, which could be useful sustainable development instruments, are developed but, again, not implemented and enforced. Certain sectors of the legislation seem to work much better than others. International agreements dealing with biodiversity are largely disregarded in LAC but they are better than nothing.

- Several minor scale policies are specifically designed to address biological resources conservation. Most of these policies are applied at a local level or for a short period of time. Despite these general constraints, some of these policies seem very effective and show a great potential for the future. The most important example is Colombia's recent policy change regarding financing environment, including biodiversity, with the "Regalias" National Fund and electricity tariffs for watershed management.

- The current situation of public institutions working in biodiversity conservation is worse than it was a couple of decades ago. However, a very positive trend is developing through decentralization of the environmental authority to the state, provincial, regional and even to the municipal level. Brazil is, from this point of view, at a very advanced stage.

- The main positive changes for biodiversity conservation in the future, often tolerated but increasingly accepted and sometimes even promoted by governments, are:

  a) The participation of affected populations and interested NGOs in making environmental decisions;

  b) The establishment of special funds for the management of protected areas or for environment in general;

  c) Several economic instruments such as percentage

of infrastructure investments allocated to protected areas, land taxation benefits for private reserve owners, debt for nature swaps, redistribution of tax incomes to municipalities in proportion to the territory being protected, public banking special attention to environmental legislation, support to investments by multilateral financial institutions and foreign assistance, tax exemption for NGOs, etc.;

d) The establishment of private legal forest reserves on farms;

e) The popular actions, the *tutela* rights, the environmental ombudsman and other judicial improvement regarding environment; and

f) The establishment of private institutions with the active support of governments, to handle biodiversity utilization and conservation issues.

- Finally, the experiences registered in this paper may show that biodiversity conservation programs with very concrete, often local or regional actions, have a better chance of success than the grandiose political and legal changes hat are never implemented.

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Opportunities of the Inter-American Development Bank in Financing Biodiversity Conservation: a View from the World Bank

by Ken Newcombe[1]

The Importance of Biodiversity

Recently, biodiversity has been labeled as a field with enormous economic and financial opportunities. However, several images ignore important factors such as the relationship between biodiversity, poverty alleviation and sustainable development. People talk about the potential of ecotourism, but in many places in Latin America ecotourism is not a sustainable use of biodiversity. Similarly, pharmaceutical uses of biodiversity may not provide significant conservation results. International financial institutions such as the IDB and the World Bank must understand what biodiversity does for development, and how biodiversity conservation can contribute to poverty alleviation and the growth of wealth. In this context, understanding issues such as global food security is very important.

Biodiversity may ensure the sustainability of agriculture, fisheries and forestry. It is important to understand the resilience of crops and the role of biodiversity in agricultural productivity. Sustainable forestry and fisheries is an issue of understanding ecosystem dynamics, and how biodiversity adds to the resilience of natural ecosystems in the quest for ever expanding utilization. It is also essential to understand the link with poverty. About 80% of rural communities still use traditional medicines for their health and well-being. When analyzing the chaotic and rapid growth of urban settlements, it is possible to conclude that the opportunity cost of bringing these people into the modern health system is a real increase in their poverty.

The Economic Potential of Biodiversity

There are major multinational companies in Latin America trying to develop alternatives to traditional forest products. They are trying to fit processes into landscapes in an ecologically sound and viable way. Understanding these dynamics is important for biodiversity. Supporting those sorts of investments and being at the leading edge of thinking is important. This is a process that cannot include the worst outcomes of highly susceptible monocultures which act as agents of biodiversity destruction.

It is important to analyze initiatives such as the "Precious Woods" enterprise based in Costa Rica and Brazil. This is one of the first truly sustainable forestry businesses that should be supported by the IDB and the World Bank. "Precious Woods" is a leading edge example of sustainable logging from the point of view of social and biodiversity values. There is sustainability in the sense that the negative impact of a long-term operation is small and that biodiversity and cultural values are conserved. In contrast, the timber extraction in most logging operations in Latin America is unsustainable. The contractors want to get their hands on fast timber revenues. Indigenous communities such as those of the Cachi Indian Federation in Ecuador may have traditional forest management knowledge but may lack information on the terms of trade, or how to negotiate with local or offshore timber companies. Moreover, they may not know what the resource rents are and may not appreciate the economic implications of the proposed unsustainable logging practices. In Rondonia, for example, there is recorded evidence of a rancher bulldozing the remains of a traditional Indian village in order to put aside the property rights issue

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with the purpose of claiming the land without constraints. These are the agricultural frontiers of poverty, biodiversity loss and economic development.

One can observe another dimension of the interplay between biodiversity loss, biodiversity potential and economic development on the Patagonia coastline. Here it is possible to see the start of a promising ecotourism industry based on sighting killer whales, birds etc. But this population is under threat. Tourism has grown fourfold in the last four or five years. The region now lacks adequate infrastructure investments. There have been investments in offshore fisheries which are undermining the food chain and are not economically sustainable. This is the kind of interface with biodiversity that shows the economic opportunity the IDB should be looking for. In this case it is important to examine the interaction between a six hundred boat fishing fleet and the viability of what is probably a more promising source of economic growth in that region. The IDB could analyze how biodiversity conservation, economic development and poverty alleviation go hand in hand.

In the Galapagos Islands there is a similar situation. There is overharvesting of sea cucumber and a dramatic depletion of shark populations. On the other hand, the revenues earned by the national park are earmarked to benefit the protected area ensuring that ecotourism is sustainable in terms of its physical and cultural impacts. The World Bank has a project in Ecuador but faces several challenges. These should be met by looking for sustainable ecotourism investments and a fishing strategy.

An important consideration for determining the role of an institution like the IDB is whether special funds or participation in the GEF are required. To make a start, grant resources may not be necessary. This is possible by defining the win-win outcomes between biodiversity conservation and sustainable development. As a development institution, the IDB should look at such outcomes in terms of its mainstream agenda to understand the implications for biodiversity. The agricultural sector, forestry or coastal and offshore fisheries all have interfaces with biodiversity. For all of them the impact of investments on biodiversity should be analyzed. What is the effect of biodiversity conservation on the sustainability of these systems?

These solutions may seem simple when considering the complexity of the issues. Some of them are policy related. Others call for better land use plans or improved design of rural development programs. Commodity prices may be distorted due to market failures in such a way that the cultivation of agricultural crops expands to marginal and fragile lands. As a result, the agricultural landscape is fragmented and has destroyed biological corridors; pollination capacity for important crops is lost; the capacities of the natural predators to assist the agricultural system is depleted.

Do financial institutions consider these issues? The World Bank has not done this although it clearly would be critical to do so. If the IDB were to do it, it would find many opportunities. The required actions may not demand the use of grant resources. Such resources, in fact, may turn biodiversity into a welfare state. Although the GEF has resulted in a big boom for biodiversity with a really important risk capital for sustainable development, the World Bank still predominantly uses its own loan resources. The IDB is in a similar position. As a regional organization, it could work even more effectively than the World Bank, especially if cooperating with it and NGOs.

The Financing Strategy

The World Bank perceives biodiversity as having global significance. When developing the country dialogue and defining assistance strategies, it is now beginning to examine the implications of better management of biological resources both on the country and on the global level. Many of these implications are likely to reveal win-win options. A recent paper, developed through a partnership effort with the World Resources Institute, focuses on mainstreaming biodiversity in agricultural development. Future areas of work will include forestry, degraded landscapes and coastal zones. What are the tradeoffs and the win-win options? The World Bank has a biodiversity portfolio, but what it really needs to do is to inject biodiversity considerations across the entire spectrum of assistance

by the Bank group. The World Bank is trying to understand the biodiversity implications of changing trade regimes for agricultural development, incentives to export logs and concession policies regarding natural resource utilization.

There are many options to seek out the win-win situations. International financial institutions may have been blind to them because they are not fully informed about how biodiversity supports economics. Local resource managers, multinational corporations and international agencies are only going to succeed if they can somehow align social and private profitabilities. The IDB and the World Bank should analyze the current incentive structures to determine the factors that cause the loss in biodiversity. With its resources and in partnership with the private sector, the IDB can find the convergence of public and private profitability. It is important to build strategic coalitions between stakeholders. Some of these will need compensation to stop using resources in a manner that is not for the greater public good. Others will be encouraged to increase their sustainable management of natural resources.

It is important to maximize the IDB's role as a source of know-how and not only capital. Capital opens doors and will get the Bank into the dialogue with its clients. On the other hand, understanding the dynamics of the political economy and how to use available opportunities to promote ecosystem conservation is what is really important. That is where the IDB's leverage is. Grant resources may not be necessarily needed for increasing the role of the IDB in biodiversity conservation.

Financing Innovation in Latin America

Conservation trusts driven by grant resources are useful vehicles. However, they are financially inefficient. There are good reasons why governments should invest in sustaining biodiversity through their recurrent budgets. Governments have to recognize the value of biodiversity conservation. The IDB does not need to support a trust fund just because that seems to be an easy way of financing. The governments have to sense their responsibilities. On the other hand, trust funds are extremely important in providing an opportunity to people to invest in biodiversity when they do not have other access to capital. In Latin America, the World Bank recently initiated the Latin America Enterprise Fund, supplemented with GEF money and some private capital. The Fund has identified good managers and has a lot of potential. But it is very difficult to put together the consortium with private capital. The difficulties of trying to raise the money to get the US$20 to US$25 million in place as the core of this venture capital fund are really symptomatic of the problem the World Bank has in defining biodiversity as a business in the first instance. Nevertheless, this fund has the potential to be replicated throughout Latin America and may constitute an area in which the IDB and the World Bank should cooperate.

Opportunities for Effective Financing

Whatever mechanism international agencies use through their lending or concessional financing, it is critical to empower the people whose livelihoods are at stake. These organizations should not give just financial resources, but also, and more importantly, provide ideas and strengthen the styles of biodiversity entrepreneurs. The World Bank has learned in the process of developing a very large number of microenterprise funds that matching peoples' money is a very good way to guarantee a commitment of its participants. This is also true for biodiversity.

Regional and local natural resource management projects, such as those included in the GEF program, may offer great potential for biodiversity conservation. They can be complex, often with social conflicts, but may also be rewarding. In such programs, the donor agencies should be able to match the commitment with up-front funds. The will of the communities to start managing the natural resources almost always exists, because they know better than donors how fast their resources are degrading.

Governments should be committed to co-finance biodiversity conservation programs. A World Bank operation in Mexico illustrates the changing attitudes of the countries. After serious lack of counterpart funds in

an earlier phase, the government has expressed publicly its commitment to contribute to the core cost of the protected areas system.

Latin American ecosystems are often very charismatic and many of them have already captured global attention. The opportunities to get willingness to pay from consumers for the protection of these valuable biological resources must be utilized. That is something the IDB is also very good at.

ANNEX 1. List of Presenters and Participants

INVESTING IN BIODIVERSITY CONSERVATION
OCTOBER 28, 1996

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