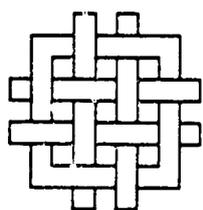


**NATURAL  
ENDOWMENTS:  
Financing  
Resource  
Conservation  
for Development**

# **NATURAL ENDOWMENTS: Financing Resource Conservation for Development**

International Conservation Financing Project Report  
Commissioned by the United Nations Development Programme



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## FOREWORD

Worldwide environmental stresses have made international headlines with increasing frequency in recent years. Awareness is rising that industrial and developing countries alike are exceeding the carrying capacities of their natural resource base.

The outlook for many developing countries is particularly precarious. Billions of people in those nations could face life without adequate food, fuel, water, and the raw materials necessary for their livelihood. Their living conditions will deteriorate further unless something is done to reverse current trends. If concern is not translated into action, the ultimate legacy of environmental degradation will be human misery.

During the struggle to improve current economic welfare, maintaining the resource base on which future opportunities depend has proven difficult. The World Commission on Environment and Development analyzed this predicament in its acclaimed report, *Our Common Future*. It concluded that just as environment and development can undermine each other, so also they can reinforce each other when a country pursues a sustainable path of development. Looking ahead, the Commission stressed a key problem: a serious lack of funding for conservation projects and strategies that improve the resource base for development. Moving from concern to action requires new sources of financing and new mechanisms for identifying, launching, and supporting projects that increase the natural resource base.

The World Resources Institute (WRI) was honored when the United Nations Development Programme and other sponsors commissioned it to identify innovative means of investing in the main-

tenance and restoration of the natural resources of the developing world. The results of one year of intensive study and consultation in both the developing and the developed countries are reflected in this report. The study has considered ongoing conservation financing programs, assessed the scope for improving and expanding them, and proposed new initiatives. Chief among these new proposals is the concept of International Environmental Facilities (IEFs), joint ventures between bilateral and multilateral development assistance agencies and the developing countries. An IEF can be organized regionally or globally; its mission is to identify and foster promising resource conservation programs. Other conservation financing initiatives are proposed in the report for the world community to consider.

The options presented here crystallized during intensive rounds of analysis and consultation conducted in Asia, Africa, Europe, and the Americas. The study benefited greatly from the suggestions and reviews of the hundreds of dedicated and knowledgeable advisors, formal and informal.

Not all of the ideas presented here are new, but all are timely and worthy of serious consideration. WRI's hope is that they will spur action to increase the flow of financial resources to developing countries and to put further economic development on a sustainable footing.

James Gustave Speth  
*President*  
World Resources Institute  
Washington, D.C.

## EXECUTIVE SUMMARY

The environmental problems facing policy-makers today are unprecedented. Until recently, air pollution, deforestation, the spread of deserts, and loss of biological diversity may have appeared as distant isolated threats, having little impact upon domestic economic growth. But current evidence has created increasing political awareness that mismanagement of natural resources is profoundly changing the natural systems that support the world economy.

Because these problems are global, international cooperation will be essential for devising and implementing strategies to maintain the earth's natural resource base. Developing countries—many of which are already struggling to meet the needs of their burgeoning populations and to service their external debts—are going to need substantially more capital to carry out conservation measures. In the spirit of the Brundtland Commission's definition of sustainable development, this study defines conservation as maintaining natural resources as the basis for meeting the needs of current and future generations. While unmet conservation financing needs in developing countries are difficult to gauge precisely, indications are that as much as \$20–\$50 billion per annum will be needed over the next decade.

Through increased cooperation, existing institutions can effectively mobilize greater flows of capital from the industrialized to the developing economies for projects that promote better management of natural resources. Many of the cooperative efforts to date have depended on steady flows of official development assistance, which currently exceed \$40 billion per year. Development assistance agencies have started to take steps to ensure that their projects promote sustainable resource use. They can do more, however, to prevent environmental degradation by formulating comprehensive policies to ensure that critical ecosystems are not sacrificed, by assuring that development projects integrate conservation as an essential component, by working to build local institutional capabilities, and by dismantling environmentally unsound projects and policies.

Investments in conservation, like investments in infrastructure, health, and education, have long-term economic benefits that can be difficult to quantify. Because conservation generally has a long payback period, public, as well as private, sector investors tend to avoid financing conservation projects. Yet,

innovative business strategies, coupled with government incentives and regulations, can lead to increased private sector investment in conservation. At least one energy company dependent upon coal-burning technologies is offsetting its greenhouse gas emissions through a tree planting program in another country; timber traders concerned about depletion of primary tropical forests are now willing to fund programs that promote sustainable tropical forest management; and financial intermediaries are starting to create incentives for increasing foreign direct investment in conservation. In addition, studies have shown that, if properly managed, nature-based tourism can substantially benefit local communities, governments, private sector investors, and the protected areas themselves.

Debt-for-Nature swaps constitute a new conservation financing instrument. They have involved the exchange of heavily discounted commercial debt for local currency commitments to conservation programs in Bolivia, Costa Rica, Ecuador, and the Philippines. Because these swaps rely on donations of private debt or purchases on the secondary market by non-governmental organizations (NGOs), the amount swapped thus far has been small (less than \$100 million) in comparison to the overall developing-world debt burden (\$1.3 trillion). Nonetheless, swaps have leveraged substantial additional funds for cash-poor natural resource agencies and non-governmental organizations.

Just as businesses must draw up coherent strategies to gain access to capital, so, too, governments must formulate strategies and action plans to attract international financing for conservation. Several planning exercises have already led to increased donor support and coordination for conservation activities on the national level. For instance, tropical forestry action plans have been completed for 16 countries, and at least 34 more are now in preparation. Action plans and strategies can also promote badly needed research into the classification and sustainable utilization of biological resources outside the narrow band of species now exploited.

Given the magnitude of the unmet conservation financing needs in the developing world and the urgent need for action to stem the loss of productive potential, complementary initiatives may be needed to fill the gap that existing institutions—as currently structured—cannot address quickly enough. This

study proposes four new initiatives that appear promising.

### **I. An International Environmental Facility (IEF)**

To overcome the obstacles to increased conservation financing, the creation of one or more International Environmental Facilities—exclusively devoted to furthering the preparation and financing of conservation projects—deserves consideration. More specifically, an IEF would pursue these goals by: 1) identifying—in collaboration with governments, bilateral aid agencies, multilateral development banks, and others—the unfunded conservation needs in the developing world; 2) helping to generate well-selected and designed conservation projects by arranging project preparation (“pre-investment”) funding; and 3) helping to arrange co-financing, including guarantees, for overall project packages from a variety of existing sources. Essentially, such an IEF would be a jointly financed, inter-agency facility of the OECD’s bilateral development agencies and the multilateral development banks that would collaborate with relevant U.N. agencies, developing country governments, and NGOs. Alternatively, separate facilities could be created for each of the three regions in the developing world. In either case, the facility would be a joint venture of existing agencies and not a new entity. An appropriate target might be \$3 billion in projects for the first five years, administered by a staff of approximately 100 and budgeted at \$10 million annually by the fifth year.

### **II. A Pilot Investment Program for Sustainable Resource Use: “Ecovest”**

The private sector’s contribution to conservation can be important because it has immense managerial, technological, and financial capabilities. Intermediation similar to that provided by an investment bank is needed to gather long-term capital, spread risks, arrange access to technology, and improve incentives for investments in such activities as wildlife utilization, sustainable forest management, the development of forest products other than timber, sustainable mariculture, etc. It is proposed that one or more pilot investment funds or “Ecovests” be set up, the size of which would be determined after a more detailed study of suitable projects and capital sources. A reasonable target might be \$25 to \$75 million, which could be effectively invested over three to five years. Capital could be obtained from such sources as development assistance programs, foundations, existing development banks, socially oriented investment funds, and private portfolio investors.

### **III. Sustainable Resource Management and Debt Reduction**

In many developing countries, economic stagnation and balance-of-payment pressures imposed by the debt crisis have exacerbated natural resource degradation. After prolonged attempts to deal with the debt crisis in conventional financial and macroeconomic terms, policymakers are searching for innovative approaches to debt reduction that may allow for large-scale improvements in natural resource management. Aid agencies are encouraged to increase the funding available for purchasing discounted debt to support larger debt-for-nature schemes and donor governments are encouraged to consider bilateral debt conversion into grants or local currency instruments for financing soil and water conservation. The sectoral policy reforms that lead to improved natural resource management can boost fiscal revenues. These revenues, in turn, can be used to buy back discounted debt at secondary market rates with the help of guarantees provided by the World Bank and other lending agencies.

### **IV. A Global Environment Trust Fund Financed by Levies on Greenhouse Gases**

Industrial countries are responsible for a high percentage of the greenhouse gases that have already accumulated in the atmosphere. Adapting to global warming and slowing the pace of climate change will require broad international cooperation and substantial funding, especially in the developing countries. Governments should seriously consider creating a Global Environment Trust Fund to support programs to slow down the accumulation of greenhouse gases and help to maintain ecosystems in the developing world. The Montreal Protocol on Substances that Deplete the Ozone Layer was an important step toward reducing chlorofluorocarbon (CFC) emissions and provides an opportunity for governments to capture a portion of the windfall profits that will accrue to CFC producers as supply contracts. Another possible revenue source is a carbon tax on various fuels graduated in proportion to how much carbon dioxide each releases. Any charges on greenhouse gases will encourage energy efficiency in the use of fossil fuels and a more rapid adoption of alternative energy sources and CFC substitutes. Preliminary studies suggest that a charge on greenhouse gases will generate billions of dollars in additional revenue. Part of these funds should be managed for environmental protection by an international body with broad representation.

## PREFACE

This study is the result of a year of analysis and consultation on possible options to mobilize sizable new funding for conservation in the developing world. The major impetus for the study came from the World Commission on Environment and Development, chaired by Prime Minister Gro Harlem Brundtland of Norway. The Commission's report urged that "serious consideration should be given to the development of a special international banking program or facility" to increase substantially "investments in conservation projects and national strategies that enhance the resource base for development."

The United Nations Development Programme (UNDP) commissioned the World Resources Institute (WRI) to undertake a year-long study that would develop a series of options and stimulate international debate on ways to achieve the goals set forth in the Commission's report. UNDP also secured wider sponsorship of the study from an array of public and private sector donors. From the outset, it was apparent that a combination of financial and environmental expertise, entrepreneurship, sensitivity to the concerns of developing countries and political realism would be essential to achieving the project's goals.

Throughout this period of consultation and research, an international consensus has been growing among world leaders that stronger action must be taken to prevent further erosion of the global resource base. Against this background of growing awareness and cooperation, proposals that seemed implausible a few years ago are now being actively debated in international policy meetings. It is hoped that the options and ideas set forth in this paper will become part of ensuing international discussions on conservation financing so that some of its recommendations may lead to action in the near future.

The process of direct consultation with environmental and financial experts in both developing and developed countries has been an essential part of the study (for a partial list, see Appendix A). The study's authors are most grateful for the time and insights of these experts, including those we have not been able to list. Throughout, it received inspired guidance from its sponsors panel: Timothy Rothermel, Thomas Cox, Chuck Lankester, Michael Gucovsky, and William Powell (UNDP); Gilles

Lamoureux, Phil Paradine, and Luce Bourgaoul (CIDA); Twig Johnson, Jack Sullivan, Jack Vanderlyn, and Molly Kux (U.S. AID); Dan Martin and George Hogenson (MacArthur Foundation); Kirk Rodgers (OAS); Joan Martin-Brown (UNEP); and Jon Jensen (Pew Charitable Trusts). Over the course of the past year, the study has greatly benefited from a distinguished international advisory panel made up of representatives of leading financial institutions, government agencies, and non-governmental organizations. Equally important, the study profited from consultations with leading representatives of the developing countries in a series of six regional workshops held in Costa Rica, Brazil, the Côte d'Ivoire, Zimbabwe, India, and Thailand. The study's authors are most grateful to the co-chairs and local hosts who helped make the workshops a success: Alvaro Umaña, Mario Boza (Costa Rica); Paulo Nogueira-Neto, José Pedro de Oliveira Costa, Eduardo Gutierrez (Brazil); Denis Konan Konan, Karl van Orsdol (Côte d'Ivoire); Reuben Olembo, Liberty Mhlanga, Adolfo Mascarenhas (Zimbabwe); B.B. Vohra, Ashok Khosla (India); Pisit na Patalung, Nay Htun, Malee Suwana-Adth (Thailand). Some 100 representatives from over 40 developing countries participated in these workshops. These meetings enabled the study's authors to broaden their dialogue with resource managers and policymakers on the preliminary options set forth in an earlier draft of the Working Paper.

Through meetings, correspondence, and direct consultation with representatives of assistance agencies, NGOs, and others, the study team also exchanged ideas with a large number of experts from the developed countries. It was also helped greatly by the research contributions of Donald Hawkins (The George Washington University); Arthur Heyman (OAS); Kreg Lindberg (The Johns Hopkins School of Advanced International Studies); Michael Ross (Vrije Universiteit, Amsterdam); Montague Yudelman (Conservation Foundation); and Anthony Zamparutti (The Johns Hopkins School of Advanced International Studies). Finally, the study benefited greatly from the generous support of a large number of WRI colleagues. The study team hopes that this report does justice to the valuable insights gathered throughout this consultative process.

# 1. CONSERVATION FINANCING IN SUPPORT OF SUSTAINABLE DEVELOPMENT

## 1.1 THE GLOBAL ENVIRONMENTAL CRISIS AND THE GOAL OF SUSTAINABLE DEVELOPMENT

As the twentieth century draws to a close, the world faces an unprecedented environmental crisis. The evidence of this accumulates with daunting speed: from desertification in the Sahel to forest decline in Europe, from burning South American rainforests to the ozone hole over Antarctica and to the pollution of the world's oceans. In the face of such evidence, awareness of the global environmental crisis has gone from the environmental and scientific fringe to the international summit, as government leaders in the developed and developing countries have expressed concerns about these threats to the global environment: Arias (Costa Rica); Brundtland (Norway); Bush (USA); Gandhi (India); Gorbachev (USSR); Kohl (West Germany); Mitterand (France); Mugabe (Zimbabwe); Mulroney (Canada); Sarney (Brazil); Thatcher (UK)—the list grows steadily. *Time* magazine warned, however, that translating this concern into an effective response will not be easy: "Let there be no illusions. Taking effective action to halt massive injury to the earth's environment will require a mobilization of political will, international cooperation, and sacrifice unknown except in wartime."<sup>1</sup>

The world economy has now expanded to such an extent that pollutants emanating mainly from the industrialized countries affect not only their own environments but also those of the developing countries. Toxic exports, the thinning of the ozone layer, and global warming are just the most serious of the growing list of global environmental impacts. At the same time, deforestation and other activities in many

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**Environmental decay concerns  
finance ministers as much as  
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developing countries take an environmental toll in the industrialized countries.

The interdependence of developed and developing countries is as much economic as it is environmental. Over three quarters of the trade of developing countries is with industrialized countries, and over one quarter of the latter's trade is with the former. The developed countries, however, largely control the key parameters of the world economy within which developing countries must contend with widespread poverty, burgeoning populations, unstable commodity prices, and burdensome debt. In Latin America, Africa, and parts of Asia, the burden of servicing this debt and the related net outflow of financial resources have been major factors in the widespread decline of per capita income. Moreover, protectionism vis-à-vis the processed (rather than primary) exports of developing countries promotes further overexploitation of their natural resources. Under these difficult, day-to-day conditions, developing country governments have been compelled to set aside their growing environmental problems.

Still, mobilizing for action becomes more likely as it becomes clear that the health of the world environment and the outlook for its economy are inseparably linked. Environmental decay concerns finance ministers as much as environment ministers. The facts are straightforward. Without a productive natural resource base, there can be no sustained economic growth. And, without such growth, improving the living conditions of the poor will be impossible. In the 1987 report, *Our Common Future*, the World Commission on Environment and Development concluded that the environmental crisis and development crisis are one, and that they can be resolved only by the common pursuit of *sustainable development*—that is, “*development that meets the needs of the present without compromising the ability of future generations to meet theirs.*”

“  
**Awareness of the global environmental crisis has gone from the environmental and scientific fringe to the international summit.**  
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## 1.2 THE DEVELOPING WORLD ENVIRONMENT AND ECONOMIC DEVELOPMENT

Developing countries are particularly vulnerable to environmental deterioration because natural resources are so vital to their economies. Primary production (agriculture, fisheries, forestry, and mining) contributes over a third of gross national product, over two-thirds of total employment, and over half of export earnings in the low-income countries. Far more than in the richer countries, natural resources are the principal economic assets. Moreover, since at current population growth rates a billion more people must be supported every 13 years on a deteriorating resource base, this overdependence will not soon diminish. Far from bringing about broad-based development, overexploitation or mismanagement of natural resources has contributed to famines and floods, dams that silt up within a fraction of their projected life spans, irrigation schemes that cause soil salinization, and the conversion of grasslands and tropical forests into wastelands.

“

**The scope of the unmet conservation financing needs of the developing countries is difficult to estimate, but there are indications that as much as \$20 to \$50 billion per year (equal to 1 to 2 percent of their GNP) will be required over the next decade.**

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The trends of environmental deterioration are clear. Tropical forests that were disappearing at a rate of some 11 million hectares per year in the early 1980s<sup>2</sup> are vanishing much faster today. In the Brazilian Amazon alone, 8 million hectares of primary forest were lost in 1987.<sup>3</sup> Along with the forests themselves, species are disappearing at unprecedented rates, estimated at from 100 per year to 100 per day.<sup>4</sup> Other fertile habitats that support rich biological diversity, including coral reefs and wetlands, are rapidly diminishing.

Fuelwood helps meet the energy needs of nearly half the earth's population. However, the Food

and Agriculture Organization of the United Nations (FAO) calculates that most people who depend on fuelwood in the developing countries are gathering wood far faster than it can regenerate; at the current rate of replanting, little more than 10 percent of what is cut is replaced. Overcutting for fuelwood often leads to increased soil erosion and rapid desertification. To counter these twin threats, FAO estimates that 55 million hectares would have to be planted with trees by the end of this century. Forestry programs to meet such needs may cost over \$2 billion per year.<sup>5</sup>

Land degradation takes many forms. Current trends suggest that rainfed croplands in the developing world will become 30 percent less productive by the end of the century as soils are depleted or eroded. In the most extreme cases, eroded surfaces become deserts. The United Nations Environment Programme (UNEP) estimates that worldwide losses in agricultural productivity from desertification total \$26 billion per year.<sup>6</sup> Part of this loss results from poor irrigation practices. While irrigation is still the primary technique for raising farm yields, half the world's irrigated land is now badly salinized. Although \$6,000 per hectare is being spent in some regions to expand irrigation, as many hectares are lost each year through waterlogging or salinization as are brought under irrigation.

Evidence abounds that inadequate efforts to maintain the natural resource base of the developing countries have undermined economic progress. Agricultural yields have been depressed, profitable export industries have been destroyed, and labor force productivity has been weakened. Environmental degradation threatens to sabotage the very economic growth that would permit the developing countries to meet the needs and aspirations of their own people and to join the industrialized countries in resolving global environmental problems.

As the Brundtland Commission makes clear, all nations must pursue sustainable development if global environmental degradation is to stop. The developed world has a special responsibility since it causes most of the pollution. The developing countries must do their share, but can scarcely afford the costs of changing to sounder technologies while at the same time attempting to raise living standards for increasing populations and transferring billions of dollars annually to the developed countries. This study focuses on the environmental crisis in the economically beleaguered developing countries, but it implies no lesser obligation in the developed countries to adopt cleaner and more energy-efficient technologies as soon as possible.

### 1.3 THE LACK OF CONSERVATION FINANCING

For the purpose of this study, *conservation* is defined as *maintaining natural resources as the basis for meeting the needs of current and future generations*. A lack of financing for conservation has impeded activities that preserve biodiversity and the integrity of renewable natural resources, rehabilitate degraded ecosystems, and assure the environmental soundness of development projects. The scope of the unmet conservation financing needs of the developing countries is difficult to estimate, but there are indications that as much as \$20 to \$50 billion per year (equal to 1 to 2 percent of their GNP) will be required over the next decade. It will be difficult to raise such sums when external debt burdens are strangling many developing countries and the industrialized countries are pressed to balance their budgets. A wide range of financing options will be needed to help meet these large and urgent needs.

Raising funds to maintain the natural resource base has been particularly difficult because the private sector has largely been uninterested. Rarely is there a commercial return on projects that emphasize a sustained, long-term yield. Private investors tend to be attracted by projects that promise quick and high returns, usually at the expense of future productivity. In the classic Net Present Value method of evaluating investments, returns 20 to 50 years hence are discounted so heavily that they are virtually irrelevant for investment decisions. International investors, in particular, are wary of long-term investments in the developing countries in view of the uncertainties surrounding inflation, political climate, and profit repatriation.

Other impediments to private conservation financing are almost inherent. The benefits of many conservation investments—clean air and water, genetic diversity, and intact ecosystems—cannot be sold to the consumer. The absence of property rights in natural systems means that those returns cannot be appropriated by the investor. Important environmental costs and benefits are not taken into consideration. Leaving out these so-called externalities lowers the return of meritorious projects, while overstating the return on questionable ones.

For this reason, most investments with long pay-back periods and non-marketable benefits are left to the public sector. Investments in basic education, public health, and infrastructure are recognized to be essential to economic welfare, even though rarely attractive to private industry. Conservation investments that maintain the renewable resource base should be treated on an equal footing by calculating

the costs that would be incurred if the investments were not made. However, even national governments cannot capture all the benefits of investments that address global environmental problems, such as climate change and loss of genetic diversity. Maintaining forests, conserving energy, and preserving biological resources in the developing countries also confer important benefits on the developed countries and warrant the latter's economic as well as moral support.

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The moral imperative must be confronted. A commercial or economic return can help attract funding, but the ultimate justification for the conservation of nature has to be derived from the interests of future generations. The survival of species, including our own, should not be dependent on whether a satisfying economic return—as conventionally defined—can be realized.

Whether the developing countries will welcome increased conservation financing from the developed countries is an open question. The answer will most likely depend upon whether this financing supports activities that address recognized priority needs, its terms are attractive, and the funds are seen as truly additional to those that have already been committed. The more clearly it is recognized that managing natural resources on a sustainable basis is a high development priority, the less significant will the other considerations become.

### 1.4 THE LACK OF ABSORPTIVE CAPACITY AND THE ROLE OF GRASS-ROOTS ORGANIZATIONS

Some experts in natural resource management believe that well-designed conservation projects can already find funding, but in many countries such projects are scarce. These countries have a limited capacity to integrate additional projects into ongoing programs. They may lack baseline ecological data, the ability to plan and execute conservation projects, and the local community structures to sus-

tain them. Financing directed toward these bottlenecks would effectively promote natural resource conservation in the developing countries. Although funding such institution-building activities is unglamorous, it deserves greater attention, both as a component of well-designed conservation projects and as a separate program.

Absorptive capacity usually refers to the extent to which government agencies can handle additional projects and programs, but the ultimate question is how effectively local communities can organize for action. Local community organizations play the decisive role in the success or failure of most natural resource management projects. Grass-roots non-governmental organizations have emerged throughout the developing countries over the past decade as a spontaneous response to deepening economic and environmental troubles. They have succeeded by committing themselves to education and training, while providing opportunities that enable the poor to use newly acquired skills to generate income. NGOs have helped communities organize to design, implement, and monitor natural resource-based de-

velopment projects. Since community participation in resource conservation cannot be sporadic, smaller and steadier flows of funding to these grass-roots organizations are more effective than larger, one-time investments.

Besides greater funding for local NGOs, other institution-building steps that would also increase absorptive capacity for conservation projects include:

- education and training, including conservation project preparation and implementation;
- environmental information gathering, monitoring, analysis, and research;
- conservation planning, including the development of national conservation strategies, and land use zoning;
- conservation policy analysis, including analysis of incentives for sustainable resource use; and
- setting up or strengthening regional development authorities and community support systems.

## 2. CURRENT CONSERVATION FINANCING INITIATIVES

### 2.1 INCORPORATING SUSTAINABLE NATURAL RESOURCE MANAGEMENT INTO DEVELOPMENT ASSISTANCE ACTIVITIES

There is clearly a potential to increase conservation financing if initiatives currently supported by developing country governments, development assistance agencies, conservation NGOs, and the private sector are expanded. Annual development aid flows now exceed \$40 billion. Ensuring that this money is spent on environmentally sound projects and programs is certainly the most effective way to promote natural resource conservation in the developing world. Changes under way in developing countries' planning ministries and in the bilateral and multilateral assistance agencies to incorporate environmental considerations effectively into development policies and projects must be accelerated.

Governments of countries belonging to the Organization for Economic Cooperation and Development (OECD) have begun to address problems of environmental degradation in the developing countries through their foreign aid programs. Virtually all bilateral and multilateral development assistance agencies are strengthening their environmental impact assessment requirements for project evaluation, and have committed more funds to projects that protect, rehabilitate, or raise the long-term productivity of natural resources. Some assistance agencies are also providing technical and financial assistance to developing country governments and NGOs to strengthen environmental protection and natural resource management agencies.

However, a great deal more can be done within the existing development assistance framework to promote natural resource conservation. Development assistance agencies can scrutinize the environmental implications of development projects and programs more carefully, terminate environmentally unsound projects and policies, and reallocate funds to better uses. Too often, aid agencies have financed discrete development projects without assessing their environmental impacts adequately or making sure that the underlying regional development strategy—including its environmental implications, its policy framework, and the institutional capabilities of the implementing agencies—was sound. For

example, agencies have financed highway construction into primary tropical forests without ensuring that government agencies could handle the influx of migrants and that government policies would deter land speculation. Not surprisingly, such projects have frequently culminated in environmental and economic disasters.

Environmental impact assessments should be integrated into the project preparation phase and continue throughout the entire project cycle.<sup>7</sup> In addition, project planners should consider whether complementary investments are needed to safeguard the resource base. For example, water resource development projects should include investments to protect the surrounding watershed from land use changes that would alter the hydrological balance or increase sedimentation rates. To ensure that development projects do not sacrifice wildlands of special concern,<sup>8</sup> development assistance agencies need comprehensive realistic policies such as the World Bank's 1985 Wildland Policy statement. It specifies that projects should be sited away from wildlands whenever possible, that the losses resulting from projects that do degrade or sacrifice wildlands should be offset by protecting equivalent wildlands away from the project area, and that the World Bank will not finance projects that would destroy wildlands of special concern. The OECD Development Assistance Committee (DAC) and the Committee of International Development Institutions on the Environment (CIDIE) should urge their members to adopt similar policy guidelines.

Projects designed to fit within a regional<sup>9</sup> planning framework to be managed in part by local community organizations are more likely to succeed than large multisectoral rural development projects. Trying to integrate many different development activities and implementing authorities within a single project framework has proved excessively cumbersome. Neither special project authorities nor existing local government institutions have been able to manage development projects that encompass such disparate components as agriculture, social services, infrastructure, credit, and research.

Land capability and ecological studies, supported by incentives and enforcement mechanisms, are vital aspects of the regional development plans. Provisions for protected areas need to be embedded in

those plans to make sure that investments are carried out to preserve demarcated areas. For example, learning from unfortunate developments in the northwestern Amazonian states of Rondônia and Acre, the government of Brazil, with help from the World Bank, the Inter-American Development Bank, the Organization of American States (OAS), and FAO, is developing "agro-ecological zoning" to guide further development. Areas suitable for intensive agriculture, perennial treecrop development, permanent forest, extractive, cultural, and ecological reserves, as well as more traditionally conceived protected areas, are designated through land use studies. Public investments and incentives for private investment will be structured to support these plans.

The Luangwa Integrated Resource Development Project (LIRDP), developed by the government of Zambia with Norwegian aid, also stems from careful regional planning. LIRDP supports a wide range of development activities in less developed rural areas, building upon principles adopted in the Zambian National Conservation Strategy. The project will promote game management, nature tourism, and crop diversification on the basis of an integrated land-use plan developed by local- and national-level institutions. LIRDP is raising the local community's living standards and at the same time helping local people manage natural resources sustainably.<sup>10</sup>

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**Even well-planned projects succeed only if truly representative local institutions participate.**

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Experience shows that planning such projects requires much preparatory work with local communities, local governments, ecologists, and rural development specialists, and that even well-planned projects succeed only if truly representative local institutions participate. Accordingly, development assistance agencies are increasingly working with local NGOs in project formulation and implementation. Most NGOs, however, lack the technical and managerial capacity to implement comprehensive projects and meet the reporting requirements of international donors. Development projects formulated in partnership with such groups, therefore, should contain substantial education and training components. But simply providing opportunities for

education and training will not guarantee sustained activity in a given area. Local organizations often need greater assistance in meeting their core costs so that they can continue promoting sustainable activities in the region after external funding ceases.

If development assistance agencies continue to rely mainly on economists and engineers to prepare projects, the projects will not likely integrate environmental considerations, despite internal policy guidelines. Many departments in aid agencies will tend to continue business as usual, processing conventional infrastructure investment projects with only cursory attention to their environmental implications. Today, few agencies are properly staffed to diagnose regional and sectoral ecological pressures, prepare projects to counter such pressures, and provide systematic assistance to the developing countries' natural resource management institutions. In most development assistance agencies, too few suitable projects are in the pipeline and too few trained staff are available to do much about it.

## **2.2 PUBLIC/PRIVATE PARTNERSHIPS AND THE CASE FOR NATURE TOURISM**

Many businesses depend directly on the natural resources of the tropical world. *Collectively*, they will lose over the long term as these resources are degraded or even disappear. This is particularly true of multinational pharmaceutical and seed companies, which frequently use the wild genetic resources of the tropics to create new products and improve existing ones. Some conservationists and many citizens in the developing countries believe that these companies should contribute a small percentage of their earnings to assure that continued erosion of wild genetic resources will not undermine future research and development activities.<sup>11</sup> A U.S. energy company dependent upon coal-burning technologies is offsetting its greenhouse gas emissions through a tree-planting program in another country.

A recent proposal of the United Kingdom and Netherlands Timber Traders' Associations that has received considerable attention is to levy a surcharge of 3 to 5 percent on tropical timber imports, to finance programs of sustainable tropical forest management administered by the International Tropical Timber Organization. Given the lack of ready substitutes for tropical hardwoods, sales and exporters' earnings are not expected to decline significantly if such a surcharge is levied. In the European Economic Community (EEC) alone, the surcharge would generate an estimated \$50 million each year, and

much more if the United States decides to participate in the scheme. This proposal has promise, although the parties still need to resolve the potential conflicts with the General Agreement on Tariffs and Trade (GATT) prescriptions, and to assure that exporting countries' immediate economic interests would not be adversely affected.

Many other businesses based on natural resources have technological, managerial, and financial resources that the conservation cause badly needs, and there are profitable activities in developing countries that involve sustainable use of biological resources. For example, some investors have profitably developed "game ranching" operations based on indigenous species that are hardier and less damaging to the rangeland than imported commercial species. Other companies are experimenting with natural forest management systems that harvest timber on a sustainable yield basis with minimal forest disruption, while supplementing timber revenues by harvesting such non-timber products as oils, resins, nuts, and plant fibers.

Several financial intermediaries that promote private investment in developing countries, such as the U.S. Overseas Private Investment Corporation (OPIC), are now trying to avoid environmentally destructive investments. However, avoiding damage is not enough. Such institutions, including the International Finance Corporation (IFC) and a number of European investment banks, should also stimulate private investment in conservation activities by identifying prototypes, arranging financing, and working with developing country governments to create proper incentives.

"Nature tourism" has demonstrated that private investments, if managed properly, can benefit both the investor and the environment.<sup>12</sup> Many companies are already profiting from people's desires to view wildlife in pristine habitats and to trek in exotic wilderness areas. Many ecosystems preserved in their natural state can provide a substantially higher return from nature tourism than they could after conversion to other possible uses. If local populations and governments also benefit financially, nature tourism can form the basis of an entire land use system.

The tourism and travel industry now generates some \$30 billion per year from visits to developing countries. Most tourists emphasize their enjoyment of the often wild and primitive settings which they find in developing countries.<sup>13</sup> There is widespread concern, however, that the cultural and natural resources of many tourist destinations are being spoiled by population encroachment, inappropriate development, and the tourist flow itself. Govern-

ment policies should assure that carrying capacity not be exceeded by profit-seeking private operators.

While many countries derive a significant share of their government revenues and national income directly or indirectly from tourism, few fully capture the potential resource "rents" from their unique locations and natural advantages. Most allow the bulk of the tourist revenues to remain in the hands of—often foreign—hotel, travel, and tour operators, and even offer generous investment incentives and tax holidays to these international companies. Such policies not only deprive local governments of badly needed funds with which to maintain the resource base, but also encourage the excessive developments that ultimately despoil it.

Developing country governments should not only collect potential revenues from tourism, but also should allocate an adequate share of those revenues to maintain and protect the ecological resource base. Enough of the fees derived from nature tourism should be earmarked for the maintenance of the natural resource attractions as is necessary to keep them in a pristine state. The government of Ecuador is unusual in this respect because it has earmarked revenues from visitors to the Galápagos Islands for national park maintenance across the country.

Appropriate tourist charges can help keep visits within a region's carrying capacity. In Rwanda, for example, foreign tourists now pay \$170 per person for an hour's viewing of the mountain gorillas in Rwanda's Parc National des Volcans. The resulting revenues far exceed original expectations, making nature tourism the country's second foreign exchange earner, and fees could be raised further to dampen the continuing increase in numbers of visitors.

For protected areas, a three-tier fee structure makes sense: high for foreign tourists, lower for domestic tourists, and lowest for the local population. This fee structure allows the country to generate substantial revenues and increase domestic awareness of the value of the country's natural inheritance. However, since heightened awareness alone will not guarantee popular support for protected areas, a substantial portion of the revenues in excess of park maintenance must be used to benefit the local population directly by creating jobs or improving living conditions. To expand ecotourism activities, developing country governments may need help in redesigning revenue systems and attracting environmentally appropriate investments. Such institutions as the Organization of American States and the World Tourism Organization have useful experience that could be the foundation for expanded

technical assistance programs to strengthen government policies and develop programs in nature-based tourism. Moreover, development assistance agencies, including the World Bank, have virtually withdrawn from activities in this area and should consider providing financial resources to developing countries for consultant studies and technical assistance. Nature tourism can provide an example of the kind of balanced public/private partnership that is needed to promote sustainable natural resource use.

### 2.3 DEBT-FOR-NATURE SWAPS

The debt-for-nature swap is a novel conservation financing instrument conceived in recent years in response to the environment and debt crises in the developing world.<sup>14</sup> In such a swap, an indebted country exchanges foreign debt for a newly created obligation, on which payments in domestic currency are used to fund an agreed conservation ("nature") program. The foreign debt is acquired at the substantial discount at which the country's external debt is traded. Debt-servicing payments on the new domestic obligation are typically paid into a fund that finances the conservation activities.

The benefits for the various parties involved in such transactions are diverse. Instead of servicing the foreign debt it has retired, the indebted country subsequently services a smaller amount of domestic debt. If the foreign debt can be acquired at an attractive discount, and the new obligation used to fund high-priority conservation expenditures, the swap may be attractive to the debtor government. The NGOs that negotiate such arrangements receive substantial funds for natural resources conservation. The funds of the charitable source that purchased debt from a commercial bank are in effect converted at a more favorable exchange rate. And, finally, the commercial bank reduces the amount of doubtful loans on its books. Before 1987, when the first debt swap was negotiated, debt reduction had never been linked successfully to conservation financing, so these swaps generated widespread interest. Five countries have participated so far: Bolivia, Costa Rica, Ecuador, the Philippines, and Madagascar.

In the first swap, the government of Bolivia agreed to grant maximum legal protection to the Beni Biosphere Reserve as part of a project to promote sustainable forest utilization in the surrounding area. Conservation International (CI), an international conservation NGO, provided financing by purchasing debt nominally worth \$650,000 from a private bank and returning it to the Bolivian

government. In exchange, the government established a local currency endowment equivalent to \$250,000 to administer, manage, and protect the reserve. The program administrator was also able to attract \$1.3 million in financing from the International Tropical Timber Organization to execute a forest management plan commissioned by CI.<sup>15</sup>

In Costa Rica, debt-for-nature swaps have been used to support various local conservation initiatives, including a new regional development authority to manage sustainable development projects surrounding a protected area. Costa Rica has realized the largest volume of debt-for-nature swaps so far; nearly \$11 million of grants and donations were used to purchase debt nominally worth some \$70 million (5 percent of its commercial debt) and to exchange them for nearly \$36 million in local currency bonds. Some \$58 million of this external debt was cancelled with Dutch and Swedish government grants, the remainder with grants from The Nature Conservancy and other private donors from the industrialized nations.

In early 1988, the Ecuadoran government authorized Fundación Natura, a local conservation NGO, to exchange up to \$10 million in foreign debt for local currency bonds to support conservation activities. In close cooperation with World Wildlife Fund-US, the full amount had been exchanged by early 1989. Interest income on the bonds, which pay market yields, will support the development of park management plans, training of park personnel, research, environmental education, and additional land purchases, while the principal will form an endowment for Fundación Natura.

The swaps so far have reduced external debt by almost \$100 million. While they have added significantly to participating countries' conservation budgets, their impact on the developing countries' total external indebtedness of \$1.3 trillion has been negligible. There are several reasons why this instrument has not been used more widely in the search for solutions to the debt crisis. A debt swap increases domestic spending and credit, which is inflationary, but, since spending is spread out over time as the new bonds are serviced, the inflationary effect may be smaller than the effect of servicing the external debt would have been. A more pressing constraint is the political will to allocate additional funds for conservation purposes. For governments to do more, therefore, swap programs will have to include not only nature preservation, but also activities that directly address the community's immediate economic needs. Moreover, swaps cannot be expected to succeed without a well-organized and competent domestic NGO to manage the endowment and con-

servation program. If such NGOs participate along with key government authorities, then swaps will more likely conform to the indebted country's priorities and respect its sovereignty. Further, it is important to recognize that no debt-for-nature swap has transferred assets to foreign owners as debt-for-equity swaps have.

These constraints notwithstanding, debt-for-nature swaps can still be employed more widely. Although Brazil has had concerns about the swap's sovereignty implications, Brazilian authorities have now agreed to hold a workshop with local (and international) NGOs to discuss how the concept might be tailored to Brazil's needs. At the same time, a number of bills in the U.S. Congress will facilitate debt-for-nature swaps if adopted. Discussions between Sweden and Poland to exchange debt reduction for pollution-reducing measures in Poland and the Baltic region are advancing too. Where countries so clearly have compatible interests, negotiations seem likely to succeed.

Both private and public donations have been used in previous swaps to acquire commercial bank debt, but with the exception of one donation of \$250,000, banks have been unwilling to donate debt. More favorable tax and accounting regulations could encourage them to do so. A similar breakthrough may be possible with respect to bilateral, publicly owned debt, which has so far been inconvertible, if legislative proposals already introduced are adopted. (Options of this nature are discussed further in Section 3.3.)

## 2.4 CONSERVATION ACTION PLANS AND RESEARCH

Many governments have expressed awareness of conservation's importance by producing national action plans for the long-term use of their natural resources. Some of these plans focus on forestry, fisheries, agriculture, and other sectors. Others, such as strategies to preserve biodiversity, cut across sectors. Whatever their scope, producing such action plans should be more than a publishing exercise. They should stem from a process by which local people work with government agencies and international donors to develop and implement specific programs.

One planning exercise that has increased donor support and coordination for resource conservation in the developing world is the Tropical Forestry Action Plan (TFAP). The TFAP brings together bilateral and multilateral assistance agencies, developing country governments, and NGOs. With help from a

secretariat organized by FAO and an international advisory body, action plans have now been formulated for 16 countries, and are being prepared in more than 34 other countries. Each plan represents an effort to reduce deforestation and promote sustainable forest use through investments, policy changes, and institutional improvements. Several development assistance agencies have already pledged additional funds to implement action plans in particular countries. Donor agencies can effectively promote conservation by supporting the planning process and by making additional funds available to implement national Tropical Forestry Action Plans.

Based upon similar principles, national and international NGOs, research institutions, and development assistance agencies are now formulating a Global Strategy for Conservation of Biological Diversity. The strategy aims to achieve a consensus on international priorities for maintaining biodiversity, to provide a framework for detailed regional action plans to stem the loss of biodiversity, and to realize opportunities for using it to benefit local people. As part of this same effort, an Emergency Action Plan for Protected Areas will be developed for protected areas requiring increased attention and for new protected areas needed in regions that scientists agree have the greatest biodiversity value. With adequate donor support, these activities should increase the number of well-designed and coordinated projects to conserve biological diversity.

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Research into the identification, classification, preservation, and sustainable use of tropical biological resources outside the narrow band of species now exploited is grossly deficient.  
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Scientists agree that research into the identification, classification, preservation, and sustainable use of tropical biological resources outside the narrow band of species now exploited is grossly deficient. Despite discoveries of remarkable medical and agronomic value, only a handful of researchers are investigating the many ways by which indigenous peoples harvest useful substances from tropical wildlands on a sustainable basis. Much of the private sector's reluctance to spend more on such research stems from the difficulty of obtaining patent protection for

new medicines and other chemicals derived from tropical species. Some bilateral and multilateral agencies appear willing to fund such research, although most of the resources are currently provided by such non-governmental organizations as WWF and the International Union for the Conservation of Nature and Natural Resources (IUCN). Development assistance agencies can contribute by including funds for training, institutional strengthening, and research support in relevant projects. Private foundations, which currently support a wide range of research initiatives, can also contribute more substantially.

Existing institutions and research networks, such as the Biological Diversity and Genetics Resources Program of the Commonwealth Science Council (CSC), operate on a precarious financial footing. The CSC program seeks to explore genetic diversity, promote inexpensive techniques for studying genetic resources, identify key species for development, and support regional research centers. Operating in 30 Commonwealth countries, it also cooperates with key international scientific bodies.<sup>16</sup> Efforts such as these can open channels for greatly increased foundation support.

Two recent multilateral forestry conferences held in Bellagio, Italy endorsed a significant increase in research, within the TFAP framework, on natural forest management, the ecology and conservation of

tropical forests, and tropical forest genetics. Much of this additional research can be conducted by existing institutions, if they are strengthened and supported. The Consultative Group on International Agricultural Research (CGIAR) has recently decided, in principle, to include forestry research within its mandate. Currently, the CGIAR supports a network of public agricultural research institutions that work primarily on raising productivity and yields of the most widely consumed foods. CGIAR institutions have used wild relatives of major food crops extensively and are investigating their further potential. The International Board for Plant Genetic Resources (IBPGR), a CGIAR institution, works closely with FAO to provide technical assistance and training to developing country institutions to "ensure the collection and conservation and use of germplasm so as to contribute to raising the standard of living of people throughout the world."<sup>17</sup> In recent years, the CGIAR's Technical Advisory Committee has urged member institutions to devote more research to agricultural sustainability, which includes more research on drought and stress-resistant crop varieties and the environmental consequences of alternative farming systems. Substantially increasing international assistance for this kind of research, especially on tropical forests, and including training and institutional strengthening, should be a high donor priority.

### 3. ADDITIONAL CONSERVATION FINANCING INITIATIVES

The options presented in the preceding chapter will not be realized quickly. It takes time to change the priorities of governments, the perceptions of private investors, and the capabilities of NGOs. Meanwhile, natural resources deteriorate at what may be an accelerating pace. It is doubtful whether, even if all the proposed options are implemented, enough will be done to reverse current trends. Supplementary initiatives are needed since existing mechanisms have fallen far short of needs in recent years. The global nature of the present environmental crisis calls for new institutional responses. Four such initiatives are especially promising.<sup>18</sup>

#### 3.1 AN INTERNATIONAL ENVIRONMENTAL FACILITY (IEF)

##### 3.1.1 Rationale and Objective

Too few conservation projects<sup>19</sup> are prepared, financed, and implemented, and of those that are implemented, too few succeed in promoting wide-spread, long-lasting improvements in resource management. The reasons for this are numerous. First, many developing countries and bilateral aid agencies still do not have suitable models or sufficient expertise in conservation project design, and they often utilize inappropriate approaches borrowed from conventional infrastructure projects. Second, the funds available from foreign assistance and government counterpart budgets are far too limited for the tasks at hand, and projects often fail to mobilize adequate levels of locally available resources. Third, the financial instruments available to some assistance agencies are often ill suited to conservation finance; for example, even those multilateral development banks (MDBs) that are acquiring expertise in this field can make conservation loans only at near-market rates, except to the poorest countries.<sup>20</sup> And, fourth, neither within developing countries nor among them do development agencies adequately coordinate their programs and priorities. Thus, the shortfall is both quantitative and qualitative: not enough funds are channeled into conservation finance and, even when they are, they tend to be spent ineffectively.

Conservation projects require more preparation to understand ecological processes, to gain community support, and to build managerial capacity than does, say, a bridge construction project. Successful efforts typically start small, testing sustainable methods of resource use and community management models in a limited area, often through the efforts of local NGOs. Programs that have been able to expand on the basis of tested models have paid great attention to training, institution-building, and mobilizing local community support and resources. They have evolved in partnership with higher levels of government and with external funders.

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The shortfall is both quantitative and qualitative: not enough funds are channeled into conservation finance and, even when they are, they tend to be spent ineffectively.  
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Such programs require a different mode of external support; a more continuous, long-term involvement capable of providing a varying mix of inputs as the program matures; a more flexible and adaptive approach to project design; much more attention to building institutional capacity; more preparatory work with local communities; in general, a greater willingness to work directly with extra-governmental organizations; and financing arrangements that encourage rather than substitute for increasing local resource mobilization. Support of this kind already taxes the capabilities of development assistance agencies, but must be provided on a scale far greater than in the past if resource degradation is to be arrested.

In response to these problems, serious consideration should be given to setting up one or more International Environmental Facilities (IEFs). The options would be to set up one global IEF, or three regional IEFs, one each for Asia, Latin America, and Africa. The IEFs would help mobilize substantial ad-

ditional funding on appropriate terms from the bilateral development agencies, the multilateral development agencies, and the private sector for resource conservation programs. Their mission would be to help identify urgently needed and appropriately designed conservation programs, and to find support for their preparation, implementation, and expansion phases. Specifically, such a facility would:

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**The mission of the IEFs would be to help identify urgently needed and appropriately designed conservation programs, and to find support for their preparation, implementation, and expansion phases.**

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- 1) Identify—in collaboration with developing country governments and NGOs, UN agencies (such as UNEP's Clearinghouse Unit), multilateral development banks, and other agencies—priorities within the developing world's (or each region's) large conservation agenda and strategies for successful intervention. The IEFs would concentrate on promoting interagency coordination in funding the most urgent developing world conservation agenda, including responses to the threat of global climate change. Here, it would take guidance from the World Conservation Strategy and its national counterparts, the Global Strategy for Conservation of Biodiversity,<sup>21</sup> the Tropical Forestry Action Plan, and other global agendas for high-priority conservation action.
- 2) Help foster promising resource conservation programs, in coordination with NGOs and assistance agencies, by arranging for the financial, technical, and managerial inputs needed to build on promising beginnings. This role addresses the special needs of conservation projects and programs, particularly at the design stage where the traditional feasibility study carried out by a team of engineering consultants is often inappropriate. It is also closely linked to the coordinating role identified above since activities that are not soundly based on community consensus, local managerial capacity, and proven sus-

tainable modes of resource use cannot be expected to absorb increasing amounts of external funding.<sup>22</sup>

- 3) Help arrange financing for expanding conservation programs from bilateral, multilateral, national government, private sector, and other environmental financing sources that materialize (such as the Global Environment Trust Fund explained in section 3.4). The IEFs would act as brokers, enlisting support in the form of grants, technical assistance, loans on concessionary and market terms, endowments and equity inputs, appropriate to the level of the programs' development. They might enable OECD governments and multilateral development banks that wish to increase significantly their support for resource conservation projects to do so, both by increasing the pool of eligible programs and by pooling grant finance with concessionary and market loans and with other inputs.

In general, the IEFs would serve as intermediaries between developing country governments, multilaterals, bilaterals, and NGOs. They would help identify promising conservation programs and would find technical and financial support for their development. The IEFs' financial role would be to assemble flexible co-financing packages that combine standard development financing for conventional project components with special funding that may be needed for institutional development and investments with long-term, non-capturable paybacks. In one example of this financial role, an IEF could channel funds into the purchase of discounted external debt and the establishment of local currency bonds for long-term environmental financing (see also Section 3.3). The IEFs would help structure financial support to encourage local resource mobilization and ultimate financial self-reliance.

It should be stressed that the IEFs, as conceived here, are not new agencies. They are cooperative undertakings of existing development agencies and not independent institutions that raise funds in their own name. The IEFs could help to translate into action the increasing concern in the developed world over international environmental deterioration and to add new resources to current development assistance budgets for conservation financing. With support from the developing countries, an IEF could be initiated with a few leading bilateral and multilateral agencies as founding sponsors, thus avoiding the lengthy negotiations a full multilateral agreement on a new global institution would require.

The IEFs would support high-priority resource

conservation projects in the following areas:

- 1) restoring, protecting, or using oceans and the atmosphere sustainably;
- 2) preventing the loss of genetic diversity by protecting and using biological resources sustainably;
- 3) establishing, restoring, protecting, and maintaining national parks and biological reserves;
- 4) developing sound systems of natural resource management and promoting their use;
- 5) supporting training and other activities to strengthen the scientific, technical, and managerial capabilities of conservation institutions and their personnel;
- 6) supporting efforts to increase public understanding and appreciation of conservation;
- 7) promoting regenerative approaches in farming, forestry, fishing, and watershed management; and
- 8) promoting energy conservation and environmentally benign energy technologies.

### 3.1.2 Organizational Structure

There are alternative models for IEFs, although none that capture their special features exactly. Detailed organizational design is a matter for further inter-agency consultation and negotiation among a large number of interested parties. Broadly speaking, however, the IEFs would be joint ventures, sponsored by many of the OECD countries' bilateral development agencies, the multilateral development banks, in cooperation with developing country governments, U.N. agencies, and both national and international NGOs. It would require an executive reporting to a governing body representing sponsoring institutions from both developed and developing countries. Such a governing body could help shape a consensus on the latter's urgent conservation agenda.

For reasons of efficiency and cost effectiveness, the IEFs' management would be hosted by a sponsoring organization, presumably a multilateral institution. However, personnel would also be deputed from other bilateral and multilateral agencies, developing country government bodies, and NGOs to participate in project preparation and other activities, on short- and long-term assignments. This structure will ensure that the IEFs are operationally joint ventures, and that projects embody the special needs of conservation financing.

Inter-agency cooperation often can be achieved best at a regional or national level. Moreover, the environmental, developmental, and financial con-

straints to sustainable resource management differ remarkably among regions. To be successful, IEF staff would have to be in close continuing contact with programs in the field. Accordingly, IEFs should have Asian, African, and Latin American regional offices. As pointed out earlier, fully independent regional organizations might be set up. The regional development banks would provide a regional dimension by participating actively in an IEF.

Each IEF would have its own multidisciplinary staff that could bridge development finance and ecology and play a catalytic role in fostering conservation projects. Its staff would act more as "program officers" than as loan officers, maintaining ongoing relationships with conservation programs that are being financed and actively seeking promising new initiatives worthy of support. Staff would also be familiar with the operations of the bilateral and multilateral development agencies, the United Nations family of organizations, developing country governments, the private sector, and the NGO community in order to direct financial and technical resources from these organizations to programs as appropriate. This approach would allow IEFs to keep core overhead to a minimum.

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**The IEFs are conceived as cooperative undertakings of existing development agencies.**  
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Over time, the staff of an IEF would become expert in the ecological, institutional, and financial design of resource management programs. It would ensure that current environmental research and insights gleaned from previous project experiences are reflected in project design. It would also bring innovative financing mechanisms to bear, including swaps, local currency financing, guarantees, and other mechanisms for spreading risk. These activities should help bring private sector investors, foundations, and NGOs into a domain thus far left largely to the public sector.

### 3.1.3. Financial Arrangements and Size of Program

OECD governments and multilateral agencies that sponsor the IEFs would commit certain sums over an initial five-year period to finance projects

and programs identified through the IEFs. It is possible that these inputs could contribute to a dedicated "Fund" for which an IEF would have financial responsibility. Such a resource would provide maximum flexibility in tailoring financial packages to the needs of the recipient. However, an alternative and equally feasible model envisages IEF involvement in program identification, preparation, and financing, while stipulating that the resulting financial transfers and monitoring activities would remain the responsibilities of the sponsoring national and international agencies. In this way, an IEF could work with environmental funds that might be created by development assistance institutions.

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**A global IEF should start with a commitment by sponsoring governments to provide a total of about \$3 billion over an initial five-year period in additional conservation financing.**

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By its nature, an IEF would start on a relatively small scale and would expand along with the number and scale of the programs it supports. However, to have any appreciable impact on unmet conservation needs, a global IEF should start with a commitment by sponsoring governments to provide a total of about \$3 billion over an initial five-year period in additional conservation financing—about one twentieth of the 0.1 percent of GDP additional contribution recently proposed by the Norwegian Prime Minister, Gro Harlem Brundtland. Likewise, a regional IEF should start with a commitment of at least \$1 billion. As for the IEF's operational costs, these would be covered through fees charged on the programs handled by the IEF. These fees—in effect, the second commitment required of OECD countries—would amount to about \$10 million per annum by the fifth year.

The International Fund for Agricultural Development (IFAD), set up by OPEC and the industrialized countries in 1978 to promote rural agricultural development, is an example of a relatively small joint enterprise that has been able to launch a large number of projects. IFAD identifies, appraises, and co-finances projects. With a staff of 220, it initiates 24 projects each year. Its annual operating costs currently total \$34 million. Over the last ten years,

IFAD has financed some \$10 billion worth of projects, and has secured \$7.5 billion in co-financing from other funding sources. Still another example is the FAO/World Bank Cooperative Program, created in 1969 to help prepare agricultural projects. The program was broadened into an Investment Center to support the work of the regional development banks, IFAD, and commercial banks. With approximately 100 professionals at its disposal, the FAO Investment Center has generated nearly 760 projects, resulting in the mobilization of \$34 billion. Simulations carried out as part of this study show that under reasonable assumptions a global IEF could generate \$500 million per year in relatively small-scale conservation projects, cover its expenses through a small user fee, and keep its staff to about 100 people.

### **3.2 A PILOT INVESTMENT PROGRAM FOR SUSTAINABLE RESOURCE USE: "ECOVEST"**

#### **3.2.1 Objectives and Functions**

Natural resources—forests, rangelands, wetlands, and other important ecosystems—cannot be saved by locking them away. They can be preserved only by using them for the benefit of local populations within the limits of natural growth and regeneration. Identifying sustainable resource management systems and providing incentives to ensure they are widely adopted are the keys to conservation.

Experience shows that, given access to appropriate technologies, investment funds, and appropriate economic incentives, private enterprises and households can and will manage resources sustainably. Their contributions are essential, since halting resource degradation is a task far too vast for international development assistance programs and non-governmental donors, and the private sector has immense managerial, technological, and financial capabilities.

Activities that use natural resources without degrading them can yield attractive long-term rewards to investors. Yet, too often these activities are shouldered aside by destructive exploitation encouraged by inappropriate incentives, lack of long-term capital, a risky setting, or a focus on short-term profits. By overcoming these obstacles, investors can channel significantly more private capital into ecologically beneficial projects.

Intermediation similar to that provided by an investment bank is needed to gather long-term capital, spread risks, arrange access to technology, and improve incentives for investments in sustainable re-

source management. By lowering the barriers to investment, such an intermediary could unlock substantial amounts of private capital potentially at the service of sustainable development.

More importantly, by demonstrating that well-conceived projects using natural resources sustainably can generate attractive returns to investors, it can catalyze much greater volumes of private investment than it finances directly. A pioneering pilot program that combines the entrepreneurial and financial skills of the venture capitalist with the knowledge of the ecologist could have an impact disproportionate to its capital base.

### 3.2.2. "Ecovest": Capitalization and Structure

Establishing one or more pilot investment funds for sustainable resource use, "Ecovests," probably to be affiliated with existing institutions, warrants serious consideration. The size of such a fund must be determined following more detailed study of the initial availability of suitable projects and capital sources. A reasonable target might be an initial capital base of \$25 to \$75 million, which could be effectively invested over a three- to five-year period. Initial capital resources could be obtained from a variety of sources, including: a) development assistance programs to support private-sector and small-scale development activities, b) foundation programs to support conservation and sustainable resource use, c) existing development banks, d) socially oriented investment funds, and e) private portfolio investors. The fund's capital could be augmented by access to credit and loan guarantees. These resources could be used to leverage investments by private investors from both developing and industrial countries whose contributions could take a variety of forms: equity denominated in international and domestic currencies, land, technology, resource concessions, and other inputs. "Debt-for-equity" and other debt conversions could be used to extend fund resources when appropriate. In addition, the intermediary could put together financing from appropriate sources for promising investment proposals, on a fee basis, without itself taking a direct position.

"Ecovest" could be organized in various ways, such as a program within an existing international financial intermediary or as a distinct legal entity with its own management and capital base. It is premature to specify structural features in detail, since they will depend on its sources of capital, or to specify the kinds of operations it will undertake, tax, risk, and other considerations.

However, it is important that "Ecovest" be de-

centralized in its operations and management. Since "Ecovest" will seek innovative, specialized, and relatively small-scale investment opportunities, it will have to take advantage of local entrepreneurship, capital, and knowledge, which would be difficult with highly centralized operations. Decentralization, like other structural features, can be achieved in various ways. There could be several independent or loosely affiliated "Ecovests," each concentrating on a specific region. Alternatively, a single "Ecovest" might have offices or affiliates in each region or country in which it is active.

### 3.2.3 Investment Criteria and Project Portfolio

"Ecovest" would seek investment activities that a) use the natural resource base sustainably, b) benefit the local population economically, c) offer adequate long-term returns to investors, thereby demonstrating that conservation can pay, d) provide replicable models for other investors, e) enlist significant private sector participation, and f) are not currently being adequately developed. Meeting these criteria would ensure "Ecovest's" pioneering role.

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Natural resources—forests,  
rangelands, wetlands, and other  
important ecosystems—cannot  
be saved by locking them away.  
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The program would consider investments in such resource-dependent activities as the following:

- **Wildlife Utilization:** restoring and preserving rangeland by extending existing modes of game ranching that utilize indigenous species, alone or in conjunction with cattle;
- **Sustainable Forest Management:** protecting remaining primary tropical forests through private investments in plantations of commercially valuable species and in sustained yield management of natural forests;
- **Non-Timber Forest Product Development:** enhancing the value of intact tropical forests by improving the cultivation, collection, processing, and marketing of non-timber forest products such as fibers, oils, nuts, resins, and other products, including medicinal plant compounds;
- **Renewable Energy and Energy-Saving**

Projects: reducing environmental damage and economic costs by investing in small and medium-sized solar, wind, hydro, geothermal, and bio:mass energy projects and by investing in commercial companies supplying energy-saving services and products;

- “Ecotourism”: strengthening conservation efforts by investing in tourist facilities and services that do not disrupt existing ecosystems, as part of overall nature conservation plans and strategies that provide adequate benefits to local communities and host governments;
- Sustainable Mariculture: conserving mangroves by applying new technologies to transfer shrimp cultivation from over-developed and ecologically vulnerable mangrove areas to landed locations with greater potential for sustained use.

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**A pioneering pilot program that combines the entrepreneurial and financial skills of the venture capitalist with the knowledge of the ecologist could have an impact disproportionate to its capital base.**

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By successfully developing such pilot projects, “Ecovest” can demonstrate the potential for restoring and protecting ecosystems through private sector initiatives for the benefit of the local community.

### **3.3 SUSTAINABLE RESOURCE MANAGEMENT AND DEBT REDUCTION**

The prevalence of debt-for-nature swaps discussed in the previous section is increasing, but the sums involved have been relatively small. In the absence of strong tax or regulatory incentives, mechanisms that rely on donations of private debt, or secondary purchases by nonprofit organizations, are unlikely to generate sufficient funds to reduce significantly either the overall burden of debt or the overall gap in conservation financing in the developing world. However, other options based on debt reduction could have considerably more impact.

In many developing countries, the economic

stagnation and balance of payments pressures resulting from the debt crisis have exacerbated natural resource degradation. While income and employment have stagnated or declined in heavily indebted countries for almost a decade, labor forces have increased by 25 to 30 percent. Many of these jobless have migrated to upland watersheds and remote forested areas, swelling the numbers of shifting cultivators and aggravating a major source of resource degradation. The increased burning of the Amazonian rainforest by migrant colonists and large ranchers results in only a brief period of economic return before the land becomes totally unproductive.

Moreover, extreme fiscal stringency in heavily indebted countries has forced drastic reductions in government expenditures, often as part of adjustment programs negotiated with the International Monetary Fund (IMF) and other international financial institutions. While some cutbacks in investment spending have forestalled the implementation of projects that might have degraded natural resources severely, others have crippled fledgling programs in environmental management and rehabilitation that are crucially important in sustaining natural resources for future development.

Until now, solutions to the debt crisis have been discussed in conventional financial and macroeconomic terms, but not in terms of sustainable natural resource management. This has occurred despite the linkage recognized in the “Environment, Growth, and Development” report of the Joint Ministerial Committee of the Board of Governors of the World Bank and the International Monetary Fund, which states: “Promoting growth, alleviating poverty, and protecting the environment are mutually supportive objectives in the long run. Rather than address environmental issues in isolation, decision-makers in governments and international institutions should consider the preservation of the environment along with other issues central to the formulation of development policy.”<sup>23</sup> To implement this policy, it is important that programs and policy adjustments that ensure sustainable natural resource use become an integral part of any future debt restructuring efforts, both at the sectoral and at the national levels. Moreover, policy adjustments in resource sectors can be used to provide badly needed new revenues for sustainable development.

#### **3.3.1 Expanding the Scope of Debt-for-Nature Swaps**

Several donor governments have demonstrated willingness to allocate bilateral aid funds to support

debt swaps for conservation and other development purposes. Swedish and Dutch aid have been used to support the Costa Rican debt-for-nature swap, helping that country convert 5 percent of its outstanding external commercial bank debt to local currency bonds. The Costa Rican government has welcomed the opportunity to reduce its foreign indebtedness through buybacks at deep discounts. At the same time, interest and principal payments on local currency bonds have enabled local NGOs to expand reforestation programs and have provided an endowment for the rehabilitation and protection of national parks. The United States Agency for International Development is prepared to channel increased support to African NGOs utilizing debt swaps.

While utilizing existing bilateral aid allocations in this way may not provide additional resources in a global sense, it nonetheless offers an important opportunity to expand funding for NGO programs that support sustainable resource management. The donation of aid funds to NGOs for the purchase of discounted commercial bank debt is not subject to the restrictive agreements that inhibit direct buybacks by debtor governments. Moreover, exchanging external debt for local currency bonds allows donors to create endowments and to provide continuing financial support that is very helpful to NGOs and long-term conservation programs. At present, few bilateral aid programs have entered this field. The scope for expansion is considerable and warrants serious consideration by other agencies.

### **3.3.2 Reducing the Publicly Owned Debt of Low-Income, Heavily Indebted Countries**

Most of the lowest-income countries in Sub-Saharan Africa face abysmally low and declining per capita income and an impossible debt situation. For the 34 countries eligible only for International Development Association (IDA) financing, 80 percent of external debt is owed to official creditors. This debt alone represents more than 500 percent of annual exports, a ratio that has grown throughout the 1980s with repeated reschedulings, accumulated arrears, and stagnant export receipts. Scheduled debt service represents approximately 50 percent of exports, a level of payments that has not been approached and is generally conceded to be impossible.

Some donor governments have recognized this and have converted, through 1987, about \$2 billion in bilateral debt to grants—about 6 percent of outstanding debt to official lenders. A more far-reaching breakthrough was achieved at the June 1988 Eco-

nomie Summit meeting in Toronto among the "G-7" governments. The creditor governments participating in the Paris Club agreed to a menu of options for debt relief that included 50 percent reductions in interest rates, stretched-out repayment periods with longer grace periods, and the cancellation of one-third of the debt service obligation. These options have been applied in a number of recent Paris Club reschedulings.

In addition, the World Bank's Special Program of Assistance and the IMF's Extended Structural Adjustment Facility offer substantial additional development finance for low-income countries in Sub-Saharan African countries, within the framework of negotiated macroeconomic reform and structural adjustment programs. However, even these programs are unlikely to restore badly needed growth in Sub-Saharan Africa, let alone reverse the disastrous deterioration of the natural resource base on which future development depends.

For this reason, additional debt relief for low-income, heavily indebted countries may be both realistic and necessary. It has been proposed that an additional one-third of debt service obligations to official creditors be converted to domestic currency bonds, income from which would be used to finance high priority programs in natural resource maintenance and human resource development. High on the list of priorities for such a program would be an expanded effort to combat desertification and soil degradation in the semi-arid countries, especially through a greatly expanded program to restore vegetative cover for fodder, fuelwood, and other basic needs. These efforts could be spearheaded by community groups and NGOs in many countries, building on successful local models and pilot programs. For the 34 IDA-only countries, assuming a 4 percent real interest rate, this conversion program would create a fund equivalent to approximately \$1 billion per year for maintaining soil resources.

Little new institutional machinery would be needed to carry out this initiative. Conversions could be coordinated among creditor governments through the facilities of the Paris Club, while local currency expenditures could be programmed through existing bilateral development cooperation and aid programs, or through inter-agency cooperative mechanisms, such as an International Environmental Facility discussed above.

### **3.3.3 Linking Sector Policy Reform to Resource Conservation and Debt Reduction**

Improving sectoral policies in many developing

countries can reduce heavy fiscal and economic losses, and also reduce ecological damage. Taking the forest sector as an example, recent studies<sup>24</sup> have shown that tax, credit, and other economic policies affecting forests in many developing countries result in accelerated forest depletion, along with huge economic and fiscal losses. Many of the countries incurring these losses are heavily indebted, and are the largest repositories of the world's remaining tropical forests and biological diversity. Documented fiscal losses range from \$500 million to over \$1 billion per year in such countries as Indonesia, Brazil, and the Philippines.

Potential improvements include better collection of forest resource rents, better design and enforcement of forest revenue systems, corrected incentives to forest-based processing industries, and reduced subsidies to competing land uses such as cattle ranching and agricultural settlements. These improvements can reduce deforestation directly by improving forest management, and indirectly by slowing the construction of logging roads along which settlers and shifting cultivators invade the forest. Such changes can also raise government

- 4) Policy reform will also raise earnings by stimulating greater efficiency in logging and processing, thereby reducing wastage of valuable wood.
- 5) By reducing the conversion of natural forest to cattle ranches and shifting cultivation, policy reform will reduce the burning of exportable timber in clearing land.<sup>24</sup> At the same time, abandoning subsidies to cattle ranches frees government expenditures.
- 6) Increased government revenues from the forest sector, by reducing fiscal deficits, will indirectly help generate additional net foreign exchange earnings by reducing inflationary pressures that stimulate capital flight and discourage productive investment.

A recent study of forest policy in the Côte d'Ivoire suggested that additional foreign exchange earnings on the order of US \$150 million per year would come through a combination of these mechanisms if appropriate sectoral adjustments were made.

Many developing countries have begun to take advantage of these opportunities, with assistance from the World Bank and other development lending agencies. Sector loans for improved forest management are now in the World Bank pipeline for Indonesia, the Philippines, China, Sri Lanka, Ghana, the Côte d'Ivoire, Kenya, and the Sudan. In addition, the Tropical Forestry Action Plan is generating national action plans in over 50 developing countries, many of which will include policy improvement as an important area of action.

These sectoral adjustment programs typically promote improved natural forest management, increased investment in forest plantations, and stronger forest conservation. Loans that support these programs generally provide for the demarcation and stronger protection of ecological reserves. They reinforce forest management agencies through training, technical assistance, and budgetary support. They specify the critical policy changes needed to prevent further wastage of forest resources. By linking these elements, they are themselves a significant additional contribution to conservation financing.

The impact of sectoral loans would be strengthened by linking forest-sector lending to debt reduction of heavily indebted countries with extensive tropical forests. Many such countries, especially in Latin America, are not eligible for concessional IDA loans, and can scarcely incur additional debt on harder terms, except for activities that promise a rapid and high market payoff. Heavily indebted countries are even less willing to make sensitive poli-

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**Promoting growth, alleviating poverty, and protecting the environment are mutually supportive objectives in the long run.**

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revenues and net foreign exchange earnings, despite reduced forest exploitation. Net foreign exchange earnings can be increased in several ways:

- 1) If logging or processing industries are controlled by foreign enterprises, as in parts of West Africa, higher taxes on log and timber exports to capture resource rents can reduce the outflow of excess profits.
- 2) In countries experiencing capital flight, such as the Philippines and many countries in Latin America, higher forest taxes will reduce the outflow of excess profits earned by *domestic* logging concessionaires and millers.
- 3) Correcting industrial incentives and export policies can raise net foreign exchange earnings by allocating logs to their most valuable economic uses (as experience in Indonesia, the Philippines, and the Côte d'Ivoire has shown).<sup>25</sup>

cy changes when the principal beneficiaries will be foreign creditors who will earn a substantial portion of the additional revenues through increased net debt service outflows.<sup>27</sup>

Improved earnings from forest sector reform could be used by these countries, with the help of the World Bank and other development lenders, to buy back debt from creditors at secondary market prices. Debt buybacks helped substantially to resolve Latin America's debt crisis of the 1930s, and the scope for using buybacks in the present crisis has increased as the average discount on developing country debt to commercial banks has grown steadily to more than 50 percent. Developing countries can benefit from debt buybacks by capturing this market discount. Recently, Chile repurchased \$300 million of external debt tendered by its creditors at an average discount of 44 percent, using exchange reserves generated by rising copper prices.

In the past, lenders have restricted buybacks through clauses in syndication agreements,<sup>28</sup> in order to forestall the possibility that debtors could force up the market discount through threats of default, and then benefit from repurchases at those higher discounts (the "moral hazard" risk). Permitted buybacks have been limited in size, and linked to specific "extra" sources of foreign exchange (such as official capital inflows or windfall gains in export prices). However, an important aspect of the Brady Plan<sup>29</sup> for debt reduction is the suspension, for three years, of restrictive clauses in syndication agreements which would facilitate debt reduction, and lender resistance now seems to have diminished. If the foreign exchange earmarked for buybacks is generated by actions to improve government revenues and foreign exchange receipts, the moral hazard risk for lenders is minimized. To the extent that these additional earnings are not entirely earmarked for debt repurchases, those lenders that are not party to the buyback schemes, as well as new lenders, will benefit from an increase in the country's debt servicing capability.

One limitation to buybacks is that they require the use of foreign exchange reserves, which are typically very limited. If debtors could repurchase debt with more secure securities ("exit bonds"), then the buyback payments could be aligned more closely with the forecasted increased flow of revenues. However, in past attempts, debtors have been unable to convince creditors that such replacement securities would be senior to, and thus less risky than, the original debt. For this reason, the Brady Plan and other approaches to debt reduction call for guarantees or other forms of "credit enhancement" from bilateral and international financial institutions, such

as the World Bank and the IMF.

The World Bank and other development lenders can facilitate the linkage of sectoral adjustment and debt reduction in several ways. Again, using the forest sector example, the process could consist of several steps:

- a) First, the interested government, in cooperation with a development lending agency, would analyze the possibilities for policy reform and institutional strengthening in the forest sector, in preparation for a sectoral adjustment loan. The analysis would estimate potential fiscal gains arising from improved policies and more productive forest management. This analysis would form the basis for a sectoral adjustment loan, which would finance institutional strengthening, cushion the short-term effects of policy reform, and strengthen conservation forestry.
- b) For heavily indebted developing countries, the World Bank or other lending agency could help in obtaining agreement from commercial bankers to the effect that a portion of the additional net foreign exchange revenues achieved through policy improvement may be used to buy back debt at market discount.
- c) If the borrowing country lacked the reserves to exercise this buyback and preferred to offer exit bonds instead, the World Bank could allocate sectoral adjustment loans to collateralize the bonds or to provide a portion of the loan in the form of guarantees or other "credit enhancement" devices.<sup>30</sup>
- d) Alternatively, the sector policy reform package would include an agreement with the International Monetary Fund. In that case, the IMF could commit itself to a loan from its Contingency Finance Facility to make good any shortfall in foreign exchange earnings from the policy reform below those predicted in the analysis underlying the sector loan. This contingency financing commitment would ensure the borrowers' ability to service the exit bonds.

This option is capable of generating substantial *additional* resources for the conservation of critical forest resources by reducing economic and ecological losses. These gains are shared among key constituents: developing country governments, whose debt burdens can be reduced; commercial banks, which see the value of their claims increased; and public lending agencies, which help to stem the loss of tropical forests while simultaneously improving

economic prospects in heavily indebted developing countries.

The principle is equally applicable to other sectors closely linked to natural resource conservation, such as agriculture, energy, and water resource development. There is already considerable experience in identifying adjustment policies that can simultaneously achieve fiscal savings, improve economic efficiency and export prospects, and facilitate environmental management. A recent review of World Bank sectoral and structural adjustment loans to 43 countries noted that adjustment policies, on balance, do not appear to have a negative effect on the environment. With adequate complementary measures, the same policy variables manipulated to achieve balanced economic growth can also be geared to achieve environmental objectives.

#### **3.3.4 Linking Overall Debt Reduction to Sustainable Development**

The foregoing options have shown how reduction in commercial debt on a country-by-country basis can provide conservation financing, not only through debt-for-nature swaps, but also through debt buybacks linked to sectoral policy changes (and through conversion of official debt to local currency bonds).

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**Recent initiatives taken by the governments of the United States, Japan, and other creditors signal the beginning of a new phase in the debt crisis.**

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Recent initiatives taken by the governments of the United States, Japan, and other creditors signal the beginning of a new phase in the debt crisis. For most heavily indebted countries, net resource transfers have now become significantly negative, as new lending from commercial sources has declined. Moreover, debt service ratios have scarcely improved over the decade for heavily indebted or low-income countries. Nonetheless, statements by heads of governments at the Toronto Economic Summit in 1988, and increasing unity among major debtor nations on the need for significant debt reduction, indicate a growing interest in comprehensive approaches.

Many debt restructuring plans have been ad-

vanced. All of these, including the current Brady Plan offered by the U.S. administration, have called for the monitoring of the economic policies of debtor countries by an international institution (usually the World Bank, either alone or with the IMF) to ensure appropriate debt and balance of payments policy actions by the countries receiving debt relief.

Concomitant with the formulation of such overall debt restructuring plans, considerable work has also been done to identify the kinds of changes in economic policies and development priorities that are essential to restoring sustainable economic growth while reducing natural resource degradation. For the most part, these changes address global environmental concerns such as climate change, tropical deforestation, and loss of biological diversity. They also contribute to macroeconomic objectives by reducing fiscal burdens and economic losses. Examples include:

- a) eliminating energy subsidies and emphasizing energy conservation and least-cost energy investment strategies;
- b) reducing agricultural water subsidies to encourage more efficient use, emphasizing better management and rehabilitation of existing irrigation systems over costly new projects, and prohibiting large dams that flood important ecosystems and displace rural communities;
- c) greatly raising expenditures and incentives for reforestation, and rerouting roads and other development projects away from the remaining undisturbed forest areas;
- d) reforming forest revenue systems to discourage short-run profiteering, reducing excessive protection of forest-based industries, and investing greater resources in forest management;
- e) reducing fertilizer and pesticide subsidies and reallocating development efforts toward sustainable small farmer technologies.

This kind of policy agenda, based on assessments of the conditions and circumstances of each debtor country, should be adopted as an integral part of any broadly based debt restructuring plan. A sustainable plan should include serious attention to the need for ecosystem maintenance, environmentally sound development, and to such specific policy and program reforms as those listed above.

This is fully consistent with the policies of the Boards of Governors of the World Bank and the International Monetary Fund which were announced in their Development Committee report, "Environment, Growth, and Development." Implementing these policies will require much closer collaboration

among these and other international financial agencies, and between them collectively and developing country governments. There is still a potentially disastrous tendency within many of these institutions to compartmentalize environmental issues and, in effect, treat them as peripheral to crucial macroeconomic adjustment issues when, in many developing countries, they are indeed central.

A first step is possible within the context of individual country rescheduling operations. The International Monetary Fund, with the assistance of the World Bank and regional development banks, should incorporate these concerns in discussions with borrowing countries over new credit facilities, and encourage the central economic ministries of the borrowing countries to develop policy agendas to promote sustainable natural resource management. While the IMF lacks the personnel and expertise to deal with issues of ecologically sound development, the multilateral development banks are rapidly developing this capability. The World Bank, for example, is preparing environmental issues papers for all borrowing countries and natural resource assessments for major countries, which will identify key policy and program concerns. A formal mechanism should be created by which this work can contribute to the development of medium- and longer-term policy reform programs that are ecologically and economically viable.

### **3.4 A GLOBAL ENVIRONMENT TRUST FUND FINANCED BY LEVIES ON GREENHOUSE GASES**

#### **3.4.1 Rationale and Objectives**

Governments should seriously consider creating a Global Environment Trust Fund, to provide a funding source for environmental initiatives that would slow down the accumulation of greenhouse gases and to help maintain developing countries' ecosystems and development possibilities in the face of the global climate change that already seems inevitable. This Global Environment Trust Fund, in the order of several billion dollars per year, would be financed primarily by allocations from coordinated national levies on greenhouse gases or their sources, notably chlorofluorocarbons (CFCs) and fossil fuels. Its administration could be placed in the hands of the United Nations Development Programme, the United Nations Environment Programme, or other (consortium of) agencies.

Climate change poses a huge potential risk to sustainable development and biological resources.

Rising sea levels and increased flooding threaten coastal settlements, wetlands, and coral reefs. Shifting temperature and rainfall will disrupt irrigated and rainfed agriculture. Abrupt changes in habitat will endanger plants and animals unable to adapt or migrate quickly. Depletion of stratospheric ozone, another consequence of CFC emissions, poses equally broad environmental risks to human health, to agricultural production, and to sensitive marine and terrestrial ecosystems.

The industrialized countries are responsible for a very high percentage of the CFCs and other greenhouse gases that have already accumulated in the atmosphere, and they continue to contribute the major share of current emissions. These emissions threaten severe damage to both industrialized and developing countries. No strategy to avoid such damage is viable unless industrial country emissions are reduced significantly.

Simultaneously, large-scale deforestation and the conversion of forests to farmland in the developing countries remove a carbon "sink," and add to emissions of methane and nitrous oxides which contribute substantially to the global accumulation of greenhouse gases. Furthermore, if current trends continue, fossil fuel and CFC use in developing countries will become major sources of emissions within a few decades. No strategy to stabilize global climate can succeed without the cooperation of developing countries.

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**Energy use and polluting industrial activity in the developed countries affect the possibilities for sustainable growth in the developing countries.**  
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Global ecological and economic interdependence have become impossible to ignore. Energy use and polluting industrial activity in the developed countries affect the possibilities for sustainable growth in the developing countries. The destruction of natural resources in the latter affects the climate and welfare of the former. The polluting effects of the rapid growth of energy consumption in developing countries, and the equally rapid destruction of forests and ecosystems, touch on real concerns in the industrialized countries, just as the economic policies of the industrialized countries heavily influence development possibilities for low- and

middle-income countries. The need for international cooperation is inescapable, and is now high on the agendas of prominent international meetings.

### 3.4.2 Progress Toward Cooperation

The Montreal Protocol on Substances that Deplete the Ozone Layer was an important step toward international cooperation in climate stabilization. The 30 signatory countries (plus the EEC) agreed in 1987 to freeze CFC use at 1986 levels and gradually reduce it by 50 percent within a decade. Major countries that have not signed the protocol, including China and India, point out the additional industrial costs they would have to bear by replacing CFCs, and have called for transfers of technology and capital to offset the costs of adopting alternatives. In June 1988, an International Conference in Toronto on the "Changing Atmosphere—Implications for Global Security," called upon the governments of the industrialized countries to establish a world fund for atmospheric stabilization, financed in part by levies on greenhouse gases.

A recent UNEP conference of 80 nations in Helsinki resolved to accelerate the phased reduction by ending CFC use by 2000 and to set up a working group to devise proposals for "adequate international funding mechanisms, which do not exclude the possibility of an international fund" to defray additional costs to developing countries of adhering to this timetable.

More recently, at a UN-sponsored meeting in Geneva, the major industrialized countries agreed in principle to work toward a broader international convention aimed not just at ozone-depleting substances, but also at the broader problem of climate change and its sources, including fossil fuel use and deforestation. Any such convention will have to consider ways of sharing the costs of controlling global warming. Earlier, the report of the World Commission on Environment and Development reached the conclusion "... that the proposals regarding revenue from the use of international commons and natural resources now warrant and should receive serious consideration by governments and the United Nations General Assembly."<sup>31</sup>

### 3.4.3 Funding Possibilities

Adapting to the global warming that is already inevitable, and slowing the pace of future climate change, implies potentially heavy costs for developing countries that are experiencing rapid deforestation,

especially those with abundant fossil fuel (i.e., coal) resources, and those that are particularly vulnerable from an ecological standpoint. As a principle for sharing those costs, the "polluter pays" principle has been adopted by OECD member governments and many developing countries as a guide for national environmental policy, not only because it is generally considered fair, but also because this principle helps ensure that business decisions will be based on a full reckoning of costs and benefits. For global-scale pollution by greenhouse gases, the principle is equally applicable.

Many countries have already adopted a variety of environmental charges based on this principle, using revenues so derived to finance environmental programs.<sup>32</sup> To give but a single example, the Netherlands has adopted a *general fuel charge*, levied as an excise on petroleum fuels, natural gas, LPG, coal, and coke. The revenues finance the majority of the government's environmental programs. Industries are granted a rebate or credit when they undertake approved pollution abatement activities. This model is also applicable internationally.

This study was commissioned to seek *additional* sources of conservation financing. "Additionality" is usually interpreted by most agencies to imply an increase in the overall resources at their disposal (often at another agency's expense). However, true "additionality" can be achieved at the global level only by expanding the size of the pie—that is, by increasing aggregate productivity and income. Charges on greenhouse gases will raise productivity by encouraging greater efficiency in the use of fossil fuels, by the more rapid adoption of alternative energy sources and CFC substitutes, and by reduced environmental damage. Experience since the oil price collapse in the 1980s demonstrates that without strong price signals neither politicians nor businesspeople will take seriously the need to conserve energy and restrict fossil fuel consumption. Despite pressing economic, security, and environmental considerations, interest in energy conservation has weakened and energy demand has grown during the recent period of soft energy prices. Price intervention is an essential component of a policy to slow down global climate change.

Several specific proposals have been made to tax greenhouse gases on a national or an international level. The U.S. Environmental Protection Agency (EPA) is considering excise taxes levied on CFCs at internationally harmonized rates high enough to reduce consumption to levels stipulated in the Montreal Protocol. Another option under consideration is for production quotas, which are preferred by industry, to be auctioned by governments of produc-

ing countries. The EPA is also considering a hybrid system, combining allocated production quotas with a levy on producers. Estimates prepared for the EPA suggest that, with a rapid phase-out of CFCs, such auctions or levies could produce over the next decade revenues of as much as \$7 billion in the United States alone. Since the United States accounts for about 30 percent of the total world production of CFCs, coordinated international policies to capture the scarcity rents that result from supply restrictions could be a substantial source of revenues for global environmental programs. Unless governments capture these windfall profits, CFC producers will have a strong incentive to delay the development and introduction of substitute products.

Among the tax proposals currently advanced in the United States is the Chlorofluorocarbon and Halon Reduction Act of 1989 which has been introduced in the Senate. The bill seeks to impose a unit tax on the production and import of CFCs into the United States. Beginning in 1989, the bill proposes a base tax of \$0.25/lb, which would increase annually to \$2.50/lb in 1993. The tax would vary according to the ozone-depleting potential of the compound. Revenues up to \$100 million would be dedicated to an "Ozone Layer and Climate Protection Trust Fund," which would fund research into alternative and substitute compounds.

In Europe, several governments and non-governmental organizations have commissioned detailed analyses of taxes levied on greenhouse gases as a funding source for efforts to stabilize world climate. Such studies have been initiated by the Netherlands and by the Environment Commission of the European Community. A carbon tax is under consideration by the U.S. Congressional Budget Office and its recommendations are expected in the fall of 1989. Any levy with significant incentive effects on consumers and producers would clearly generate substantial revenues. For example, tax rates on various fuels graduated in proportion to their carbon dioxide release rates, at a level equivalent to a 10 percent tax on coal, would produce revenues in the United States in excess of \$12 billion per year. If applied in all OECD countries, such a levy would produce more than \$25 billion in revenues annually.

Most of the discussions on this policy option suggest that part of the revenues derived from a carbon tax should be offset by reductions in other kinds of taxes, in order to prevent regressive increases in costs of living. In addition, tax credits or rebates could be offered to enterprises that make approved environmental investments, such as reforestation projects.<sup>33</sup> Moreover, it is realized that there would be many competing uses for the net revenues.

Nonetheless, the revenues generated by fiscal levies designed to suppress the greenhouse effect would still provide an ample revenue base from which a Global Environment Trust Fund of several billion dollars a year could be financed.

#### 3.4.4 Fund Management and Spending Targets

There are obviously several options for managing such a fund, and a variety of objectives toward which its resources might be directed. These must be the subject of intensive international negotiations. At this stage, only broad indications can be offered.

Developing countries must adapt to inevitable climate changes that they did not induce while being called upon to contribute to feasible reductions in the pace of future climate change. Adaptation to climate change will affect development across a broad front. Expanded programs will be required in water management, agricultural research, disaster preparedness, coastal zone and infrastructure planning, fisheries management, wildlife conservation, and many others.

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In order to slow the accumulation of greenhouse gases, developing countries will also be called upon to promote effective alternatives to forest conversion and destruction, to expand reforestation programs, to use fossil fuels with greater efficiency, and to rely more heavily on non-fossil fuel energy.

There is broad consensus (although not unanimity) that new international institutions will not be needed to achieve such objectives and that, provided they receive increased support, existing institutions could address these same objectives more effectively than at present. It is, in any case, difficult to see how a new institution capable of dealing with these wide-ranging energy and development programs on the scale required by the greenhouse problem could be created without detracting from existing programs and institutions.

At the same time, however, there do exist several international institutions that operate with the requisite scope and scale of operations to confront global warming. The multilateral development banks, collectively, are one; the United Nations family of agencies are another. Strengthening and expanding the role of the multilateral development banks has already been discussed. The UN institutions, on their side, represent all the nations of the world. Moreover, the UN specialized agencies already execute an extremely broad range of programs relevant to global warming, although many of these are seriously underfunded and hindered by unwieldy procedures and bureaucracies. An expanded UN role in addressing global climate change has been proposed. According to the Brundtland Commission, "the United Nations, as the only inter-governmental organization with universal membership, should clearly be the locus for new institutional initiatives of a global character."<sup>34</sup>

The UN specialized agencies have ongoing environmental programs that, as indicated above, presently lack a viable funding base. The United Nations Environment Programme is charged with overseeing actions and international cooperation on policies and programs aimed at achieving environmentally sound development. According to the Brundtland Commission report, "The UNEP voluntary funding base of \$30 million annually is too limited and vulnerable for an international agency dedicated to serving the common interests, security, and future of humanity." Many of its programs are currently weak and underfunded.

Similarly, the Food and Agriculture Organization has extensive responsibilities for the protection

of forestry, and fisheries, including genetic resources, as well as agroforestry. Its programs, even in cooperation with national governments and other international agencies, are clearly inadequate to stem the loss of productive potential. Such programs as the Commission and Board on Plant Genetic Resources, dedicated to the conservation and utilization of germplasm, need to be strengthened and expanded. Other UN agencies, such as the UN Fund for Population Activities, the World Health Organization, and the United Nations Educational, Scientific, and Cultural Organization (UNESCO), have ongoing and underfunded programs of direct relevance to biological conservation and sustainable development. The Global Environment Trust Fund proposed here could help all these agencies in relevant areas.

In addition, such a fund could provide support for new initiatives outside the UN system, many involving non-governmental organizations. Private voluntary organizations are becoming increasingly involved in reforestation, soil erosion control, and watershed management. Grants to these organizations could significantly bolster fledgling field-based programs that are in need of longer-term support. A coalition of non-governmental organizations, including the International Union for Conservation of Nature and Natural Resources (IUCN) and the World Resources Institute, is developing a global strategy for the conservation of biodiversity to promote coordinated international efforts to prevent the destruction of critical ecosystems. IUCN has proposed a general international convention for the preservation of genetic resources. Such NGO efforts and others could also be supported by a Global Environment Trust Fund.

## 4. A CONSERVATION FINANCING AGENDA

This study is not alone in recognizing the need for bold new approaches. The Paris Summit meetings of the Group of Seven in July, 1989, concluded that "Protecting the environment calls for a determined and concerted international response." Over the last year, the world has witnessed a host of initiatives related to conservation financing, from expected as well as unexpected quarters. Most of these initiatives are still in an early discussion phase. As they have become more specific, however, it has been possible to discern much in common with the four new initiatives that the study recommends for consideration:

- 1) Recently, some staff members at the World Bank and the Inter-American Development Bank made proposals similar to the IEFs described in Chapter 3. These proposals aim to create a special environmental financing window, which is related to, yet separate from, the institutions. In the case of the Inter-American Development Bank (IDB), this could prove to be a test case for a regional IEF. All of these facilities would look to bilateral sources for their funding. Such funding might be forthcoming for an IEF in connection with the Norwegian proposal of a 0.1 percent of GDP contribution, or the possible Japanese proposal to contribute an additional amount exceeding \$2 billion to support environmental projects and programs.
- 2) Just as an IEF proposal may find an early application in the IDB proposal, so the Ecovest idea may find its first home at the United States government's Overseas Private Investment Corporation (OPIC), which is currently determining whether, together with a few private sector institutions and firms, it can initiate a Sustainable Resource Fund, to demonstrate that private sector profitability and sustainability can be compatible.
- 3) Proposals that look for creative solutions to the so far intractable debt crisis are flourishing. Many of them either directly address the need for conservation financing or have the potential to do so. The Brady Plan, which so far has not been spelled out in detail, pro-

poses to exchange debt reduction for a strengthening of the remaining claims. This so-called credit enhancement might well include policy adjustments that benefit the economy's long-term resource base. While the large-scale, debt-for-nature swaps called for by Chancellor Kohl last year in Toronto have so far not been realized, conservation financing ideas of this kind continue to surface in Europe. In the United States, several bills moving through Congress prepare the regulatory ground for large-scale swaps with a range of spending purposes. Some aim to make partial debt write-offs fiscally more attractive to banks, while others focus on easing restrictions on the disposal of bilateral debt held by the U.S. government. The latter would be in line with plans by USAID to implement debt-for-development swaps with the heavily indebted African countries. Bilateral aid is also the focus of plans for a \$10 billion Latin American Trust Fund, proposed by The Nature Conservancy and WWF. This array of proposals currently being considered conveys a sense of the wealth of ideas that are circulating in relation to the debt problem.

**“  
If debt reduction proposals  
have become a booming business,  
proposals focused on  
countering global climate  
change are proliferating even  
faster.  
”**

- 4) If debt reduction proposals have become a booming business, proposals focused on countering global climate change are proliferating even faster. The greenhouse effect, the thinning of the ozone layer, and other human-induced climatic changes have reached the public consciousness more re-

cently than the Third World debt problem. Accordingly, the world currently witnesses an even more intense proliferation of global climate conferences, studies, and calls for action. In the spring of 1989 alone, numerous world leaders and senior government officials met in London, The Hague, Helsinki, Geneva, Nairobi, etc. Among the current initiatives are the UNEP-sponsored—and increasingly rigorous—CFC convention, together with the one concerning global climate change; the study commissioned by the Dutch government of the possible modalities of a World Atmosphere Fund, the EEC study of greenhouse gas taxation op-

tions; and similar studies by the U.S. Environmental Protection Agency on carbon and CFC excise taxes, production quotas, or a combination of the two.

Listing just some of the current initiatives suggests that the world is ready to respond to the new challenges with new solutions. Implementation of a specific initiative involves careful consensus-building, so the next phase will involve modifying proposals to meet the needs of the various parties involved. At this juncture, the study's proposals are not being spelled out in detail, but their overall objective remains the same—to contribute substantially to the urgently needed increase in conservation financing for the developing countries.

## NOTES

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3. Alberto Setzer, INPE (Brazilian Space Agency), 1988.
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5. World Resources Institute (WRI), *Tropical Forests: A Call for Action*, Report of an International Task Force convened by WRI, The World Bank, and the United Nations Development Programme (Washington, D.C., 1985).
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7. The Asian Development Bank has adopted such a procedure.
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9. In some instances, integrated regional projects may need to span national boundaries to promote wise management of a shared resource such as a watershed vital for maintaining irrigated agriculture.
10. Luangwa Integrated Resource Development Project, Phase 2 Programme. LIRD Project Document No. 4, November, 1987.
11. As a way of creating a global fund for the conservation of biodiversity, the IUCN is currently studying the feasibility of taxing companies that use "biomaterials."
12. Donald E. Hawkins, *The Potential of Ecotourism for Expansion of Current Conservation Financing Initiatives*, paper prepared for the International Conservation Financing Project, April, 1989.
13. World Tourism Organization (WTO), *Yearbook of Tourism Statistics*, Vol. 1, 1986.
14. For further background, see: Alvaro Umaña, *Debt Relief for Energy Efficiency, Conservation and Sustainability*, San Jose/Washington, D.C., May 1989 (unpublished); Kathryn S. Fuller and Douglas F. Williamson, *Debt-for-Nature Swaps: A New Means of Funding Conservation in Developing Nations*, in "International Environmental Reporter," November, 1988; and Diana Page, *Debt for Nature in Latin America: A Status Report*, forthcoming in "International Environmental Affairs, A Journal for Research and Policy."
15. Department of Regional Development/Organization of American States, "Regional Development Coordinating Commissions: Their Funding and Role in Conservation Oriented Projects," paper prepared for the International Conservation Financing Project/World Resources Institute, December, 1988.
16. Commonwealth Science Council, *Biological Diversity and Genetic Resources: Life Support Species*, Summary Report of International Workshop on Maintenance and Evaluation of Life Support Species in Asia and the Pacific Region, National Bureau of Plant Genetic Resources, New Delhi, India, April, 1987.
17. Montague Yudelman, "Research and the Tropical Ecology," paper prepared for the International Conservation Financing Project, November, 1988.
18. The new initiatives presented here for consideration are far from all that could be mentioned. For

- other interesting ideas in this field, see Jeffrey A. McNeely, *Economics and Biological Diversity*, IUCN, 1988.
19. Examples of conservation projects include projects that aim to: promote sound natural resource management, including watersheds, forests, soils, fisheries; preserve breeding stocks, animal population reservoirs, and biological diversity; increase scientific, technical, and managerial capabilities of conservation institutions.
  20. Exceptions to this rule include the IDB's Fund for Special Operations. The amounts involved, however, fall far short of the unmet conservation financing needs.
  21. This strategy is being developed by WRI and IUCN with the cooperation of WWF, TNC, in association with the World Bank; it includes as its most immediate agenda the Emergency Action Plan for Protected Areas.
  22. The lack of funding for environmental project preparation has also been recognized in the World Bank where there have been internal discussions of the possibility of setting up an Environmental Project Preparation Facility (EPPF). See Stein Hansen, Maritta Koch-Weser, Ernst Lutz, *Environmental Funding Options* (Discussion Draft for internal World Bank discussion), October, 1988.
  23. World Bank and International Monetary Fund Development Committee, "Environment, Growth, and Development," Washington, D.C., 1987.
  24. Robert Repetto, *The Forest for the Trees? Government Policy and the Misuse of Forest Resources*, World Resources Institute, Washington, D.C., 1988.
  25. In Indonesia, the Philippines, and the Côte d'Ivoire, studies have shown that industrial incentives have been so generous and milling efficiencies so low that logs processed into wood products earned less foreign exchange on a round wood equivalent basis than they would have if exported directly as logs.
  26. A conservative estimate of the value of merchantable timber burned in a single year in the Brazilian Amazon is approximately US \$1 billion.
  27. In negotiations over reschedulings and new money packages, the debtor country's debt servicing capacity is a principal element.
  28. The relevant clauses specify that all prepayments must be made to banks in proportion to their claims, and that all banks must share equally with other participants any disproportionate payments they receive.
  29. The Brady Plan refers to a new debt reduction strategy outlined by U.S. Treasury Secretary Nicholas Brady in the spring of 1989.
  30. For a full discussion of the use of World Bank guarantees in a similar way, as well as a general explanation of debt buybacks, see John Williamson, *Voluntary Approaches to Debt Reduction*, Institute for International Economics, Washington, D.C., September, 1988.
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  33. As mentioned on page 6, one U.S. electric power company has already invested in forestry projects in developing countries to offset the carbon emissions.
  34. World Commission on Environment and Development, *Our Common Future*, Oxford University Press, 1987.

## APPENDIX A

### EXPERTS CONSULTED

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## APPENDIX B

### ACRONYMS

AfDB	African Development Bank
AsDB	Asian Development Bank
CFC	chlorofluorocarbon
CGIAR	Consultative Group on International Agricultural Research
CI	Conservation International
CIDA	Canadian International Development Agency
CIDIE	Committee of International Development Institutions on the Environment
CSC	Commonwealth Science Council
DAC	Development Assistance Committee
EEC	European Economic Community
EPA	United States Environmental Protection Agency
FAO	Food and Agriculture Organization of the United Nations
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GNP	gross national product
IDA	International Development Association
IDB	Inter-American Development Bank
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IIED	International Institute for Environment and Development
IMF	International Monetary Fund
IUCN	International Union for Conservation of Nature and Natural Resources
LIRD	Luangwa Integrated Resource Development Project
LPG	liquid petroleum gas
MDB	multilateral development banks
NCS	National Conservation Strategy
NGO	non-governmental organization
NORAD	Norwegian Agency for Development
OAS	Organization of American States
ODA	official development assistance
OECD	Organization for Economic Cooperation and Development
OPEC	Organization of Petroleum Exporting Countries
OPIC	Overseas Private Investment Corporation
TFAP	Tropical Forestry Action Plan
TNC	The Nature Conservancy
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organization
US AID	United States Agency for International Development
WRI	World Resources Institute
WWF	World Wildlife Fund

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