

THE INTERNATIONAL CONSERVATION FINANCING PROJECT

WORKING PAPER

WORLD RESOURCES INSTITUTE / UNITED NATIONS DEVELOPMENT PROGRAMME

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TABLE OF CONTENTS

	<u>PAGE</u>
<u>FOREWORD</u>	i
1. <u>CONSERVATION FINANCING IN SUPPORT OF SUSTAINABLE DEVELOPMENT</u>	
1.1 THE CRISIS OF ENVIRONMENT AND DEVELOPMENT IN THE THIRD WORLD	1
1.2 THE POLITICAL CONTEXT	2
1.3 THE FINANCIAL CONTEXT	4
1.4 THE NEED FOR FINANCING CONSERVATION PROJECTS.....	5
1.5 BARRIERS TO CONSERVATION FINANCING: PROJECT DEVELOPMENT AND EVALUATION	8
1.6 UNMET NEEDS OF CONSERVATION FINANCING	12
1.7 CONSERVATION FINANCING: THE COMMONALITY OF INTEREST BETWEEN NORTH AND SOUTH	14
2. <u>INITIATIVES TO ADDRESS THE THIRD WORLD'S UNMET CONSERVATION FINANCING NEEDS</u>	
<u>I. CURRENT INITIATIVES</u>	16
2.1 POTENTIAL FOR EXPANDING CURRENT INITIATIVES.....	16
<u>II. NEW INITIATIVES</u>	37
2.2 AN INTERNATIONAL ENVIRONMENTAL FACILITY (IEF).....	38
2.3 ECOVEST: A CONSERVATION PILOT INVESTMENT PROGRAM.....	48
2.4 EXTERNAL DEBT RELIEF AND CONSERVATION FINANCING.....	54
2.5 A WORLD ENVIRONMENTAL FUND FINANCED BY TAXES ON GREENHOUSE GASES.....	66
3. <u>OUTSTANDING ISSUES</u>	

APPENDICES

- APPENDIX A: IEF SIMULATION
- APPENDIX B: ECOVEST SIMULATION & CASE STUDIES

FOREWORD

This International Conservation Financing Project (ICFP) Working Paper follows of six months of analysis of and consultation on possible options to mobilize significant new funds for conservation and sustainable management of natural resources in the Third World. The major impetus for ICFP came from the World Commission on Environment and Development, headed by Prime Minister Gro Harlem Brundtland of Norway. The Brundtland Commission's report urged that "serious consideration should be given to the development of a special international banking program or facility" in order to sharply increase "investments in conservation projects and national conservation strategies that enhance the resource base for development."

The World Resources Institute agreed with the United Nations Development Programme (UNDP) to undertake a year's study that would develop the options and stimulate international debate on the ways to increase conservation financing. Financial and environmental expertise, entrepreneurship, a sense for what is politically within reach, and sensitivity to the needs of the developing world are all important ingredients of the project. This project has received support from the Canadian International Development Agency (CIDA), the MacArthur Foundation, the Organization of American States (OAS), the Pew Charitable Trust, the United Nations Environment Programme (UNEP), and the United States Agency for International Development (USAID).

An advisory council, with distinguished representatives from every continent, has guided the work of the project team. Participation by many organizations and individuals concerned with conservation financing, in both the public and private sectors, has been sought at every stage of this project. Formal meetings to discuss the options from a regional perspective will be held in the period March - early April in San Jose, Sao Paulo, Abidjan, Harare, New Delhi, and Bangkok.

So as to stimulate an open discussion with wide-ranging participation, the Paper presents a range of promising options. They are not mutually exclusive, and the paper avoids at this stage taking a position on which one or combination of these might be most effective. International discussion of the options will help in clarifying that judgement. Thus, during the period February - April ICFP will continue to develop the options through further analysis and intensive consultation in North and South, with governments, private companies, and NGO's. The draft final report, to be written in May, will include the most promising options to increase conservation financing in the Third World substantially. The Report will be issued in June and its recommendations presented at a North-South Symposium planned for September 13 & 14, 1989.

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1. CONSERVATION FINANCING IN SUPPORT OF SUSTAINABLE DEVELOPMENT

1.1 THE CRISES OF ENVIRONMENT AND DEVELOPMENT IN THE THIRD WORLD

As the twentieth century ends, the world faces an unprecedented environmental crisis. The evidence of this crisis accumulates with daunting urgency: from desertification in the Sahel to acid rain damage to European forests, from burning South American rainforests to the ozone hole over Antarctica, from the inundation of the Bangladesh flood plains to the dry stretches of the Aral Sea, the list seems endless. In the face of such overwhelming evidence, awareness of the global environmental crisis has spread from the environmental and scientific fringe to mainstream consciousness.

At the close of 1988, Time Magazine nominated Earth as the key figure of the year, reflecting the widespread concern about "...the reckless way in which humanity has treated its planetary host." The magazine warned: "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."

It will also cost money. At a time when the external debt crisis is strangling many developing countries and industrial nations are pressed to balance budgets, mobilizing funds to save the common resources of the planet will not be easy. It requires a vision that transcends borders, that places the human interest above nationality. The world's population will at least double in the next century, and 90 percent will be born in the poorer regions. These struggling billions depend on natural resources; their survival is closely related to the water and the soil, the plants, fish, and animals --to the very ecosystems now under seige. Past efforts to relieve these pressures on the environment obviously have been inadequate, and the institutions in place were never intended to handle the crisis now perceived.

Therefore, new efforts and initiatives must be advanced to increase the amount of funding directed toward sustaining the natural resource base. To identify, and where possible, develop further the range of options available is the goal of the International Conservation Financing Project (ICFP).

1.2 THE POLITICAL CONTEXT

During the past year, government leaders in the North have declared their concern about the deteriorating global environmental condition: Mulroney (Canada), Kohl (West Germany),

Thacher (UK), Gorbachev (USSR), and Bush (USA), the list grows steadily. The leaders from the South are also increasingly being heard on the environment, as evidenced by statements of Gandhi (India), Mugabe (Zimbabwe), Arias (Costa Rica), and Sarney (Brazil), among others.

Leaders in many Southern nations, however, have been more occupied by another crisis facing their countries -- the external debt. In Africa, Latin America, and parts of Asia, the burden of servicing this external debt, and the reversal of the former net capital flows from North to South, have been major factors in the widespread erosion of per capita income. Under these difficult day-to-day conditions in the Third World, it is not surprising that less attention has been given to the environmental crisis, which tends to be seen as less urgent.

Yet it is now recognized in North and South that the development and environment crises are closely interrelated, that neither can be resolved without dealing with the other. The World Commission on Environment and Development (the "Brundtland Commission,") in its 1987 report Our Common Future, stated this conclusion in no uncertain terms: "It is impossible to separate economic development issues from environmental issues; many forms of development erode the environmental resources upon which they must be based, and environmental degradation can undermine economic development." The Commission concludes that the

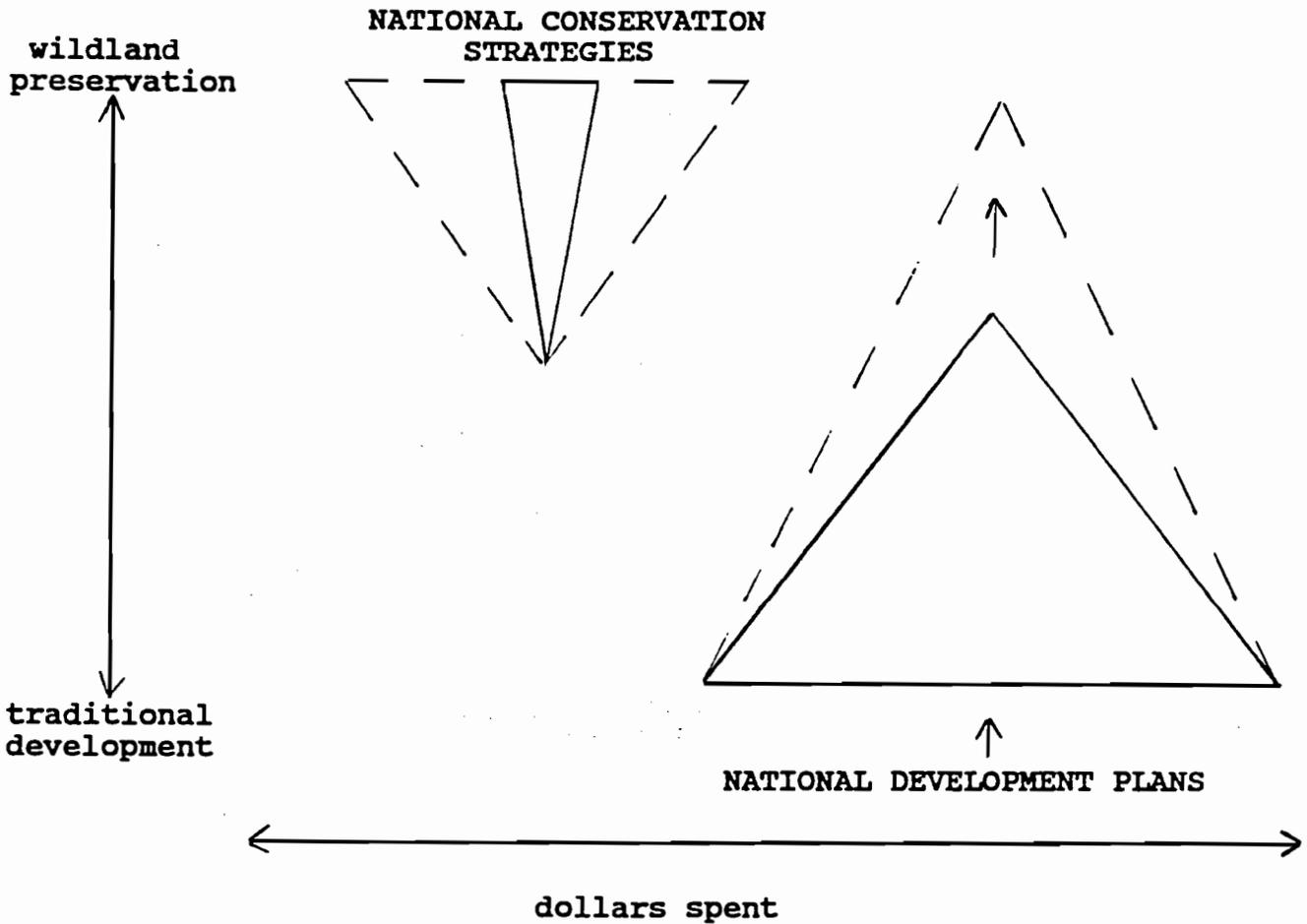
environmental and development crises really are one crisis, which can only be resolved by the common pursuit of sustainable development, that is, development which meets the needs of the present without compromising the ability of future generations to meet their own needs.

1.3 THE FINANCIAL CONTEXT

The Brundtland Commission, comprised of distinguished representatives from the North and South, calls on both regions to pursue sustainable development. The North has the economic room to maneuver in this direction; its primary hurdles are of a political nature. The South, however, faces financial as well as political obstacles in pursuit of sustainable development. A substantial net flow of development financing from North to South -- possibly including substantial debt relief -- will be crucial to overcome some of these hurdles.

Even if such financial flows are forthcoming, concern remains that financing will not cover the full spectrum of sustainable development projects. Financing will flow towards projects with a more immediate development impact, rather than those dedicated to long-term resource conservation.

Figure 1



The figure above illustrates the extent to which an increased environmental orientation in development planning broadens the activities of development institutions to include more conservation components (represented by the dotted contours of the larger triangle) as part of their overall programs. The narrow top of the triangle suggests that increased commitment from such institutions will not meet all conservation financing needs. Therefore, increasing the financial commitment of environmental institutions and creation of new institutions (shown by the contours of the smaller triangle) may help fill this gap of unmet needs.

Projects, vital for the long-term maintenance of the developing country's natural resource base, remain severely underfunded. For the purposes of this discussion paper, conservation refers to activities ranging from preserving biodiversity, all the way to rehabilitating degraded ecosystems and maintaining the economy's natural resource base. Projects at the "green" end of that range will tend to have a heavy, but not exclusive, environmental orientation, while projects at the other end will tend to include more productivity-promoting aspects (See Figure 1).

1.4 THE NEED FOR FINANCING CONSERVATION PROJECTS ¹.

There are many needs for conservation projects that will assure the long-term viability of the ecosystems on which people depend for food, water, shelter, medicine, and the other manifold products of Nature. Tropical forests are disappearing at a rate of more than 11 million hectares each year, yet only one percent of these forests are under management plans. The Tropical Forestry Action Plan estimated its annual needs at \$1.6 billion.

¹. Estimates of unmet needs in this Section owe to various issues of the World Resources Report (WRI/IIED), and The State of the World Reports (Worldwatch Institute), FAO, UNEP, IUCN, and other leading sources.

Species are disappearing at historically unprecedented rates. Critical habitats -- not only forests, but also wetlands, coral reefs, and other ecosystems -- are lost before the species they contain are even known. IUCN and others have identified some 3000 biologically diverse areas that should be brought under active protection. To remedy the current situation would require at least \$150 million per year for five years, according to IUCN estimates.

The FAO calculated that 1.5 billion of the 2 billion people who rely on fuelwood are cutting wood faster than it is growing. To meet the fuelwood demand expected by the end of this century would require planting trees on an estimated 55 million hectares. An average cost for agroforestry programs to plant such trees is \$400 per hectare. Therefore, over \$2 billion per year for the next decade would be required just to meet fuelwood needs.

Another problem is degraded lands. Six to seven million hectares of agricultural land are now rendered unproductive each year due to erosion. The FAO has estimated that, unless checked, erosion would cost 20 percent of potential agricultural production by the end of the century. Eroded watersheds also reduce the useful life of hydroelectric dams, and increase the severity of floods downstream.

UNEP estimated the annual losses in agricultural productivity from desertification at \$26 billion. Half the world's irrigated land is now badly salinized. Yet new irrigated land is relied upon to meet expanding food needs, and the cost per hectare is rising above \$2,000. And while this amount is spent for every new hectare brought under cultivation, another hectare is lost through waterlogging and salinization.

The future productivity being lost on the ground is also being lost in the air -- due to pollution affecting crops and forests and the global warming caused by the greenhouse gases. The principal greenhouse gas -- carbon dioxide -- is being pumped into the atmosphere by fossil fuel combustion at a rate of 5 billion tons per year. Deforestation adds at least another billion tons of carbon each year.

The rationale for international cooperation on these environmental crises is clear, but little has been done to date. One reason may be the reluctance of the North to provide the necessary funding, another may be the competing day-to-day needs in the South.

Even if conservation financing from the North is forthcoming, it will not necessarily be received with open arms. Its welcome in the South will depend on, (1) whether a project addresses what is considered a priority need, (2) the terms of

the financing, and (3) whether the funds are considered additional to the more development oriented aid that the North has committed to the country. However, the more that the old dichotomy between development and conservation is abrogated-- and sustainable development is accepted as the paramount objective -- the more this "additionality" test will lose its meaning. In the end, conservation financing will be seen as an integral part of the country's overall sustainable development goals.

1.5 BARRIERS TO CONSERVATION FINANCING: PROJECT DEVELOPMENT AND EVALUATION

1.5.1 The Lack of Well Designed Conservation Projects

Many countries lack portfolios of well-designed conservation projects. At present, one can search throughout the developing --or, for that matter, industrialized-- world without finding more than a handful of pilot projects that successfully blend conservation and development strategies, ensuring the integrity of the ecosystems, based on sound economic planning, and involving local communities. What is lacking? Many experts in natural resource management have expressed the opinion that "well-designed environmental projects will find funding." They

pinpoint as bottlenecks: the lack of basic environmental information, lack of environmental planning, and, finally, lack of environmental project implementation capabilities. Financing directed toward these bottlenecks --gathering data, developing environmental plans, strengthening the institutional capacity to implement projects-- would be an effective way to promote resource conservation in the Third World. Unfortunately, finding funds for this kind of unglamorous institution-building work tends to be difficult.

Too often, development assistance is structured to carry out a well-planned project, not to build the organizational infrastructure that would create such a project. Even when a solid project is implemented, failure may quickly follow after the project ends because the government or the local organization in charge cannot continue to meet the payroll. Training and holding on to the personnel who can maintain a conservation program is essential, and yet, this is one of the weakest links in all development plans. Whether the need is for scientists or park rangers, agronomists or educators, the recurrent costs of maintaining programs are a constant problem for Third World governments and non-governmental organizations.

A more comprehensive list of institution-building projects would include the following:

- o education & training, including the area of environmental project preparation and implementation
- o environmental information gathering, monitoring, analysis and research
- o environmental planning, including land use zoning
- o environmental policy analysis, including analysis of incentives for sustainable resource use
- o setting up or strengthening regional development authorities, regional NGOs, and grassroots support systems

1.5.2 Return and Time Horizon of Conservation Projects

Why has funding been more of a problem for conservation-oriented activities than for conventional economic development projects? First, the private sector is notably absent, because there is rarely a high commercial return on a program that emphasizes continual use and preservation. Generally, investors are interested in projects that promise fast, and high, financial returns. Stopping soil erosion or maintaining the wild genetic stock for crops does not have an immediate return; instead, future losses are prevented, but preventing future financial

losses does not raise money to pay back loans at market interest. Moreover, private investors, especially in multinational enterprises, are today extremely wary of long-term international investments in the South, in view of potential problems of inflation, political shifts, and repatriation risks in current difficult economic conditions.

Furthermore, many products of environmental investments are not normally marketable --soil, water, genetic material, and clean air are not normally sold to the consumer. Another factor is that, in many conservation projects, the return tends not only to be lower, but also spread out over a longer time horizon. In the classic present value method of evaluating an investment, returns 20 to 50 years hence tend to get discounted so heavily that they become irrelevant for today's investment decision.

This would seem to be a key problem in mobilizing environmental financing: the economic models which are used to calculate the project's projected returns are often incomplete. Important costs and benefits, inherent to the sustainability development project, are not taken into consideration. Leaving out these so-called externalities lowers the return of meritorious projects while overstating the return on questionable ones.

A final comment may be justified regarding the economic value of conserving biodiversity. A commercial return can help in finding the funding, but the ultimate justification for the conservation of biodiversity may be ethical. The survival of species should not become dependent on whether a satisfying economic return can be realized.

1.6 UNMET NEEDS OF CONSERVATION FINANCING

Having discussed some of the causes of the lack of conservation financing, it may be useful to consider the order of magnitude the unmet conservation financing in the Third World. Rather than producing a new, inevitably rough, estimate, ICFP has examined a number of estimates developed by leading organizations in the field, such as UNEP, IUCN, and The World Bank:

- o The international task force that launched the Tropical Forest Action Plan (TFAP) called for an annual investment of \$1.6 billion from 1987 to 1991 to halt the degradation of forest resources. Somewhat over half of that amount is now committed to forestry programs, and already existing foreign assistance funds pay for the majority of those efforts.¹

- o A decade earlier, the United Nations Environmental Program (UNEP) concluded that a minimum of \$1.5 billion per year would be needed to arrest further desertification, but no more than a small fraction was ever raised.²

- o Based on IUCN cost estimates for protected area conservation, ICFP calculates that over the next 5 years some \$150 million per annum would be needed to create and manage a global network of 500 protected areas, out of a total of 3000 areas that have been identified as meriting protection.³

- o The World Bank's Environment Department, considering the need to protect 200 of the most threatened and diverse tropical wildlands through protection supported by alternative development opportunities for local populations, came to an estimated annual funding need of \$200 to 400 million.⁴

Considering that the unmet needs estimated by the Tropical Forestry Action Plan, the World Bank, and IUCN overlap in part, a fair estimate of the urgently needed funds to conserve tropical forests, may be some \$1 billion per year. At least another \$1 billion is badly needed for increased activities to reduce soil degradation. Without moving any further along the spectrum of sustainable development, it would seem that, at a minimum, some \$2 billion is needed annually for the most essential conservation activities. This compares to \$40 billion which is currently

being spent by the OECD countries on official development assistance. Raising by even an additional 5 percent the funds flowing from North to South will be require a strong political commitment in the industrialized nations.

1.7 CONSERVATION FINANCING: THE COMMONALITY OF INTEREST BETWEEN NORTH AND SOUTH

The electorates and their chosen leaders in North and South are starting to recognize that the economic and the environmental well-being of their regions are intertwined. Our Common Future, the report of the World Commission on Environment and Development, emphasized the growing importance of global ecological linkages. The world economy and population have now expanded to such an extent that pollutants emanating mainly from the industrialized countries affect not only their own environments but also those of nations in other regions. Specifically, depletion of stratospheric ozone threatens sensitive oceanic and terrestrial biotic resources in Northern and Southern hemispheres. Global climate change caused by the accumulation of greenhouse gases may precipitate massive ecological changes and species disappearance, if ecological zones shift more rapidly than species can migrate or adapt. Exporting toxic materials to developing countries or dumping them in marine environments endangers human health as well as

ecosystems. Therefore, by taking effective action within their own economies to control these emissions, industrialized countries can safeguard ecological resources at home and in the Third World. A good start has been made through the Montreal Convention, a framework for limiting production of ozone-destroying CFCs. These limits need to be tightened, and similar international conventions should be negotiated to limit emissions of other greenhouse gases.

It is generally recognized that the North largely controls the key parameters of the world economy within which developing countries contend with widespread poverty, gyrating commodity export prices, and consequent overexploitation of their natural resources. Net capital outflows from developing countries, depressed commodity prices, restricted market access, and other international economic problems facing the Third World intensify pressures on the environment while severely limiting the capacity of developing country governments to respond. Greater sensitivity to the international consequences of economic policies established for domestic reasons in the North would promote a more favorable setting for sustainable economic development, and thereby reduce the destruction of ecological resources.

In Chapter 2 this report reviews the most promising options to fill the substantial void of unmet conservation financing. It

begins with what should be done by expanding current initiatives, then discusses a number of promising new initiatives. Chapter 3, finally, identifies some major outstanding issues that have to be addressed in order to realize a substantial increase in conservation financing.

2. INITIATIVES TO ADDRESS THE THIRD WORLD'S UNMET CONSERVATION FINANCING NEEDS

I. CURRENT INITIATIVES

2.1 POTENTIAL FOR EXPANDING CURRENT INITIATIVES

2.1.1 Introduction

There is substantial potential to increase conservation finance significantly by building on the present initiatives supported by development aid agencies, conservation NGOs, the private sector, and Third World governments. The initiatives discussed below reflect the growing participation and

cooperation among these various institutions. Some are relatively new to the environmental field (e.g., the MDBs and certain bilateral aid agencies,) while others bring considerable expertise in natural resource management (FAO, UNEP, UNESCO, UNDP, and OAS) and wildland preservation (IUCN, WWF.) Expanding of current initiatives will depend upon continued cooperation among these key institutions, as well as increased commitment on the part of the aid community, private sector, and Third World governments.

2.1.2 Towards Sustainable Development Aid Policies

Through the development assistance process, OECD governments have begun to address problems of ecological deterioration in the Third World. Virtually all bilateral and multilateral aid agencies have taken steps to strengthen their environmental impact assessment requirements and to ensure that the projects they support don't damage the environment. Aid agencies have also committed more funds to projects that protect, rehabilitate, or raise the long-term productivity of natural resources. Examples of such efforts include watershed protection, reforestation, and pollution control projects. Some aid agencies are actively cooperating with developing country governments to strengthen their environmental protection and natural resource

management institutions through technical and material assistance.

However, much more can be done within the existing development assistance framework to promote ecological protection and sustainable resource use. This became clear from a summary report of OECD's Development Assistance Committee (DAC) that describes the member countries' environmental assessment policies and efforts to assist in strengthening the capability of developing countries to deal with environmental issues.⁵

Development assistance agencies can help prevent ecological damage by a more comprehensive design of development projects that take environmental aspects into account. Environmental impact assessments can go further, on a project-by-project basis, to identify and recommend more benign alternatives and mitigating measures in project plans. Where relevant, development projects can also be defined to include complementary investments aimed at safeguarding the underlying 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.

Environmental impact assessments by themselves will not be enough. They have to be supported by comprehensive

environmental policies to ensure that development projects don't sacrifice critical ecosystems and biological resources. A good example is the World Bank's Wildlands Policy, which provides that 1) whenever possible, projects should be sited away from wildlands, 2) when projects do result in the degradation or loss of wildlands, the project should itself include provision for offsetting such losses through the protection of equivalent wildlands away from the project area, and 3) the World Bank will not finance projects that would sacrifice critical ecological resources.⁶ Similar environmental policies should guide all development assistance. OECD/DAC and the Committee of International Development Institutions on the Environment (CIDIE) are groups that could promote the general adoption of appropriate policy guidelines by their members.

Implementing such worthwhile aid agency policy changes may be difficult to achieve in the short term for a variety of reasons. Many departments within aid agencies may continue with business as usual, processing conventional infrastructure investment projects with only cursory attention to their environmental implications. Environmentally-oriented projects and programs may still represent a minor share of total development assistance activities. It is most likely that traditional development needs like physical infrastructure, agriculture, and industry, as well as health and education, will continue to take precedence over newer initiatives.

Moreover, lack of in-house staff expertise may also limit policy implementation. Few aid agencies have developed adequate staff capabilities to conduct sectoral and regional studies that would diagnose ecological pressures, to prepare projects to counter such pressures, or to provide systematic assistance to Third World natural resource management institutions. For many aid agencies, the absence of an adequate pipeline of suitable environmentally-oriented projects and the lack of in-house staff capabilities represent serious constraints on their abilities to expand these constructive activities.

Further constraints to expanding current aid agency initiatives may result from the fact that many agencies must adhere to tightly-framed rules governing usage of their limited funds. For example, multilateral development banks will find that low to middle income countries are unwilling to borrow at market rates for environmental projects with a long repayment period, and the MDB lending requirements prohibit them from providing subsidized funding to such countries.

For bilateral development agencies, on the other hand, national security and strategic concerns will largely dictate program priorities rather than conservation and resource protection needs. Moreover, the bilaterals tend to provide funds for short-term projects rather than for such worthwhile endeavors as building institutional endowments and capabilities.

Given these constraints, the aid agencies will have no easy task integrating sound environmental policies into all their development activities. Still, by fully adopting prescriptions for sustainable development, they can contribute significantly to sharply increased conservation financing.

2.1.3 Conservation in the Context of Integrated Regional Development Planning

Experience has taught that even well-designed projects, which follow aid agency guidelines, set within the context of a sound overall plan, will often promote unintended environmental damage unless they are supported by appropriate sectoral policies within a regional development plan. Too often aid agencies have concentrated on financing discrete development projects, without adequately ensuring the soundness of the underlying regional development strategy, including its ecological assumptions, its policy framework, and the institutional capabilities of the agencies responsible for implementing it. For example, highways have been constructed into areas of primary tropical forest without adequate attention to local economic policies that might incite land speculation and immigration, and without assurance that government agencies were capable of meeting their regulatory responsibilities successfully. Such inattention to the policy

and regional context of aid-financed projects has led to serious ecological, social, and economic failings.

Development assistance agencies and governments have experimented for decades with integrated rural development projects and regional development approaches. Usually, attempts to integrate many different development activities and implementing authorities within a single project framework have proved excessively cumbersome. Neither special project authorities nor existing local government institutions have been able to manage successfully development projects that encompass such disparate components as agriculture, social services, infrastructure, credit, and research. Even well-conceived integrated projects have been difficult to fund, because large international lending institutions tend to be organized along sectoral lines. Experience suggests that projects designed to fit within a framework of overall regional planning, but independently managed, are more likely to succeed than large, multisectoral rural development projects.

Land capability and ecological studies, supported by suitable incentives and enforcement mechanisms, are vital aspects of regional development plans underlying project development. Protected areas need to be embedded into those regional development plans to conserve ecosystems critical for sustainable development, and investments carried out to ensure

their integrity. For example, learning from unfortunate developments in the northwestern Amazonian states of Rondonia and Acre, the government of Brazil, with World Bank assistance, is developing "agro-ecological zones" to guide further development in those tropical forests. Areas for intensive agriculture, perennial treecrop development, permanent forest, cultural and ecological reserves, and protected areas are designated through land use studies. Public investments and incentives for private investment will be structured to support these plans. Public expenditure will strengthen local authorities, support forestry and agricultural research, and safeguard ecological reserves. This approach would seem to be a promising way to stabilize land use throughout this ecologically sensitive region.

Another example, on a smaller scale, is provided by the recently created Korup Rainforest National Park project in an area of low human population density but especially rich biological diversity in Cameroon. The overall program and its constituent projects, funded by the Overseas Development Authority of the U.K. and several international conservation NGOs, support management of the 100,000+ hectare park and the development of forestry, agriculture, animal husbandry, tourism, and social services in villages throughout the surrounding 300,000 hectares. Building upon the promising model at Korup, the government of Nigeria is considering a similar project in the

Oban Hills region that borders Korup. Conservationists believe that the two biotic reserves will be among the most important in all of Africa.⁷

These initiatives, like others underway in countries as diverse as Costa Rica, Thailand, and Madagascar, illustrate the potential of integrating development and resource conservation for the benefit of local people in diverse settings where critical ecosystems are often under severe population and economic pressure. Experience shows that a great deal of preparatory work with local communities, local governments and agents of central government ministries, as well as with ecologists and rural development specialists, is necessary to formulate such programs. Development assistance agencies should work more closely with conservation groups and host governments to ensure that the projects are embedded in sectoral strategies and regional development plans that include natural resource conservation as an integral objective.

2.1.4 Debt-for Nature Swaps

A new financial instrument that functions on a smaller scale, the debt-for-nature swap, has attracted considerable attention as a new approach to financing conservation programs. Unlike debt-for-equity swaps, none of the debt-for-nature-swaps

to date (in Bolivia, Costa Rica, Ecuador, and the Philippines) has resulted in foreign ownership of assets. Typically, international conservation groups have acquired commercial bank debt at the secondary market discount and exchanged it for local currency commitments in support of nature conservation. In effect, the debtor government allows the purchaser a more favorable exchange rate through the conversion of debt acquired at a discount into local currency or equivalents, thus committing more domestic resources to designated activities.

In the first debt-for-nature swap, the Government of Bolivia agreed to grant maximum legal protection to the Beni Biosphere Reserve as part of a scheme to promote sustainable forest utilization in the surrounding area. Conservation International (CI), an international conservation NGO, financed the deal by purchasing \$650,000 debt from a private bank. The agreement established an endowment of \$250,000 in local currency provided by Bolivia for administration, management, and protection of the reserve. Because the program was granted autonomy to raise funds for project implementation, it was able to attract \$1.6 million in financing from the International Tropical Timber Organization to execute a forest management plan commissioned by CI.⁸

In Costa Rica, debt-for nature swaps have been used to support a variety of local conservation initiatives, including creation of a regional development authority to manage

sustainable development projects surrounding a protected area. Agreements were reached between conservation NGOs and the Government of Costa Rica to swap up to \$11 million in debt for local bonds that will yield close to 25 percent average annual interest. In addition, the Dutch government, through its aid agency, purchased \$30 million in private commercial bank debt, to finance domestic reforestation bonds.⁹

In early 1988, the Ecuadoran government authorized a local conservation NGO, Fundacion Natura, to exchange up to \$10 million in foreign debt for local currency bonds, paying market interest rates, to support conservation activities. Thus far, however, international conservation NGOs have only raised enough money to purchase \$1 million of this amount.¹⁰

In assessing the potential of this financial mechanism, it should be pointed out that debt-for-nature swaps have increased the hard currency funding for ecosystem protection only to the extent that international conservation NGOs have been able to attract additional funds from donors to undertake these transactions. Commercial banks, with the exception of one \$250,000 donation, have only been willing to sell their assets at market rates, not to give them away. The secondary market price of Third World debt generally reflects pessimism about continued debt-servicing and net commitments of new money required of foreign banks. If the market price is unduly pessimistic about

the debtor country's willingness and ability to pay, then debt swaps will be in the country's economic interest. To the extent that Third World governments agree to spend resources for conservation activities that they would not otherwise have spent, the effect of debt-for-nature swaps has been mainly to increase local financing.

Development assistance agencies that consider debt-for-nature swaps as a channel for aid funds should recognize that swaps typically result in a more favorable exchange rate for such donations than for other categories of assistance. Aid agencies could reallocate international resources to conservation purposes by participating in debt-for-nature swaps. In addition, by cancelling publicly owned external debt (that would not otherwise be forgiven) in exchange for local currency commitments to conservation projects, aid agencies could expand the transfer of resources to debtor countries. Alternatively, OECD governments could achieve this objective by providing fiscal or regulatory incentives to commercial holders of Third World debt that would induce them to donate debt or sell it at a greater discount. Options of this nature are discussed further in Section 2.4.

2.1.5 Conservation Action Plans and Research

A recent initiative that could increase development assistance for resource conservation in the Third World is the Tropical Forestry Action Plan, a process involving bilateral and multilateral aid agencies, Third World governments, and conservation NGOs. With the assistance of a secretariat organized by FAO and an international advisory body, action plans are now in various stages of preparation in over 50 countries. Each one is a joint effort involving the government, a consortium of donors, and non-governmental organizations. These planning processes identify priority actions and investments to promote sustainable use of tropical forests, including institutional and policy improvements. Action plans encompass sustainable management and protection of natural forests as well as increased investment in plantations and reforestation. Some development assistance agencies have already pledged additional investment resources to implement the action plans on a country-by-country basis. Donor agencies could effectively promote conservation by supporting the Tropical Forest Action Plan process, and committing additional financial resources to implement national action plans.

On similar principles, international conservation NGOs and aid agencies are now formulating a Global Strategy for the Conservation of Biodiversity, to help achieve a consensus on

international priorities for maintaining the diversity of life forms and to provide a framework for detailed action plans at the national level. National-level plans will address priority needs for protection of critical ecosystems, related strengthening of institutional capabilities, and information bases. Like the TFAP, the global biodiversity conservation strategy is designed as a process involving governments, conservation groups, and scientists, leading to greater consensus on international priorities, and action plans at the national level. With adequate support, this activity should help to coordinate donor programs and lead to a greater flow of well-designed projects to conserve biological diversity.

Scientists agree that research into the classification, conservation, and sustainable utilization of tropical biological resources outside the narrow band of species now exploited is grossly deficient. Despite medical and industrial discoveries of remarkable significance, neither private nor public research is adequately investigating the potential of a rapidly disappearing treasure trove. Some bilateral and multilateral aid agencies express a willingness to fund such research, although most current resources come from non-governmental organizations such as WWF and IUCN. Aid agencies can contribute effectively by including training, institutional strengthening, and research support as components 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, operate on 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 centers of research. It operates in 30 Commonwealth countries, and cooperates with key international scientific bodies.¹¹ Efforts such as these can provide initial channels for greatly increased foundation support.

The Advisory Group of the Tropical Forestry Action Plan has endorsed a significant increase in research on tropical forestry, including natural forest management, the ecology and conservation of tropical forests, and tropical forest genetics. Much of this additional research can be carried out by existing institutions, if they are strengthened and supported. At present, there is no consensus for a new consultative group for tropical forest research or a new institution within the CGIAR. The network of public agricultural research institutions supported by the Consultative Group on International Agricultural Research has concentrated on improving productivity and yields of the most widely consumed foods. CGIAR institutions have made extensive

use of wild relatives of major food crops, and continue to investigate these genetic resources. The International Board for Plant Genetic Resources, 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 and welfare of people throughout the world."¹² In recent years, the Technical Advisory Committee of the CGIAR has urged member institutions to devote more research attention to agricultural sustainability, which is likely to include more research on drought and stress resistant crop varieties and the environmental consequences of alternative farming systems. A substantial increase in international assistance for tropical forestry research, including training and institutional strengthening, should be a high priority.

2.1.6 An Expanded Role for the Private Sector

The role of the international business community in conservation financing could also be expanded, based on enlightened self-interest. The recent donation of \$2 million by a U.S. utility company to offset carbon dioxide emissions through a tree-planting program in Guatemala provides an example of the role that the private sector can play in helping to solve global environmental problems. The company, Applied Energy Services,

reasoned that supporting Guatemala's effort to plant 50 million trees would absorb the equivalent amount of CO₂ that its new coal-fired plant will release into the atmosphere over its lifetime. By its action, the company generated widespread public acclaim, and suggested a model for future regulatory action to counteract greenhouse gas emissions and subsequent global warming.¹³

Other businesses depend more directly on the natural resources of the tropical world, and lose in the long run as these resources are degraded or disappear. This is especially true of pharmaceutical and seed companies, which have relied on wild genetic resources to create new products and improve existing ones. Some conservationists believe that international seed and pharmaceutical companies might have an interest in contributing a small percentage of their earnings to assure that continued erosion of wild genetic resources will not undermine future research and development activities.¹⁴

One initiative that has received considerable attention is the proposal to tax imports of tropical timber. Recognizing that primary tropical timber stocks have dwindled or disappeared in many West African and Asian countries, the Tropical Timber Associations of the United Kingdom and the Netherlands recently proposed a 3 to 5 percent surcharge on the c.i.f. value of tropical timber imports into both countries. The two

associations determined that such a tax would not decrease demand in consumer countries, and thus would have no noticeable effect upon the producer economies that depend upon these export markets. The proposal estimates that such a tax would generate approximately \$15-25 million each year, with the revenues made available to the International Tropical Timber Organization to finance programs promoting sustainable tropical forest management.¹⁵ Tropical timber trade associations in other importing countries should join in adopting and implementing this useful initiative.

Besides the possibility of donations from enlightened businesses, there are profit-oriented activities in developing countries that promote sustainable use of biological resources. Some investors have profitably developed "game ranching" operations based on indigenous species that are hardier, and less damaging to the resource base, than imported commercial species. Other companies are experimenting with systems of natural forest management that harvest timber on a sustainable yield regime with minimal forest disruption, while supplementing timber revenues by harvesting non-timber products such as oils, resins, and plant fibers. (see Appendix B.)

Many financial intermediaries that promote private investment in developing countries, such as the U.S. Overseas Private Investment Corporation, already attempt to ensure that

the investments they support are not environmentally destructive. However, such institutions, including the International Finance Corporation and a number of European Investment Banks, could expand their efforts to stimulate private investment in such protective activities by working with Third World governments to create proper incentives for foreign direct investment within their borders.

The development of nature-based tourism is one proven example of private investment that could be beneficial to the environment and investor. Many companies are already profiting from people's desire to view wildlife in relatively undisturbed native habitats, and to trek in exotic wilderness areas. Tourism experts have often found that ecosystems preserved in their natural state are far more valuable as tourist resources than they would be after conversion to other possible uses.

The tourism and travel industry, for example, now generates some \$30 billion per year from North-South tourists, most of whom list the enjoyment of the environmental setting as a main attraction.¹⁶ Many such natural resources are under great pressure, from population encroachment, inappropriate development, and sometimes from the tourist flow itself. Government policies are needed to ensure a sustainable tourism revenue stream that will allow the appropriate planning and management of the ecotourism business.

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 hotel, travel, and tour operators, even offering generous investment incentives and tax holidays to such international companies. Property taxes that wealthy foreigners pay on "villas" established to enjoy breathtaking scenery often remain strikingly low.

Those governments that have tried aggressively to tap tourists' "willingness-to-pay" have found that the persistence of foreign tourist demand and the potential revenues are much larger than anticipated. In Rwanda, for example, foreign tourists now pay \$170 per person for about an hour's viewing of the mountain gorillas in Rwanda's Parc Nacional des Volcans, and yet, tour demand is pressing strongly against capacity. A modest levy on the major travel, tour, and accomodation companies could provide a significant annual fund that could be used to strengthen national park management, to finance nature conservation NGOs in developing countries, and otherwise help to ensure the continued survival of their unique natural attractions.

Whether the potential of tourism taxes is realized or not, governments typically allocate an inadequate share of tourist

revenues to programs to maintain and protect the ecological resource base. The government of Ecuador is unusual in this respect, in that revenues from visitors to the Galapagos Islands now provide major support for national parks and protected areas throughout the country. In view of the large and elastic international revenue source that tourism represents, and its direct links to natural resource conservation, it deserves far more attention.

In order to expand ecotourism activities, Third World governments may need help in designing environmentally appropriate and financially sound programs. Such institutions as the Organization of American States and the World Tourism Organization have useful programs, but they can do more to provide technical assistance to strengthen government policies and develop programs in nature-based tourism. Moreover, major financial institutions, such as the World Bank, have virtually withdrawn from activities in this area. Development assistance agencies ought to reconsider providing financial resources to Third World governments for consultant studies and technical assistance in tourism.

II. NEW INITIATIVES

The previous Section indicated how existing institutions can mobilize greater funding for international conservation by building on current initiatives. However, the urgency of the environmental crisis demands swift, concerted action, which may not be possible for existing institutions as organized today. Thus, in the near to medium term there will likely remain substantial unmet needs for conservation financing. Consequently, the creation of new institutions or initiatives dedicated to generating additional funding for conservation deserves consideration.²

The following Sections present four new options to provide additionality in conservation financing. Some of these options are worked out further than others, but all are in the process of definition and will become sharper as a result of the analysis and consultation of the coming months. The first two options

². One of the sources of inspiration of ICFP has been the proposal made by Micheal Sweatman to set up a "World Conservation Bank". The Brundtland Commission reacted positively to the need to analyze further options of this nature. However, it has become clear to the ICFP research team that the international donor community, which would have to capitalize such an independent Conservation Bank, is at this time opposed to such idea. It is concerned about creating another international bureaucracy, and looks for a solution that more closely integrates environmental and developmental concerns. For these reasons the Conservation Bank idea was not pursued further in this report.

call for the creation of new programs: one involves a facility that helps with the design and financial packaging of a substantial program of conservation projects; the other involves a five-year program to carry out a specific range of sustainable, and profitable pilot projects with proven appeal for private sector involvement. The third option discusses new ways to involve debt and policy reform to bring about more sustainable natural resource management. Finally, the fourth option involves a World Environmental Fund financed by greenhouse levies in the North.

2.2 AN INTERNATIONAL ENVIRONMENTAL FACILITY (IEF)

2.2.1 The need for an International Environmental Facility

Many bilaterals lack expertise in conservation project design. Some multilaterals have the expertise, but make loans at near-market rates which are unacceptable to many low- to middle-income countries for conservation projects, while the multilaterals cannot provide significant concessional funding, except to the poorest countries.

To overcome these two obstacles, an International Environmental Facility (IEF) ought to be seriously considered. It would help mobilize substantial, additional financing for conservation projects from the bilateral development agencies, the multilateral development agencies, and, where possible, the private sector.

The IEF would pursue this role in various ways:

- (1) Identifying, in collaboration with IUCN, UNEP, UNDP, the World Bank, and other agencies, the unfunded part of the Third World's urgent conservation agenda. Here it will take guidance from the World and National Conservation Strategies, the Emergency Action Plan for Protected Areas, Tropical Forestry Action Plans, and other authoritative agendas for high-priority conservation action.
- (2) Helping to generate well-designed conservation projects, in coordination with NGO's and aid agencies, by arranging project preparation ("pre-investment") funding.
- (3) Helping to arrange co-financing for overall project packages from bilaterals, multilaterals, and private sector sources, possibly with the help of investment guarantee agencies. IEF will aim to bring the degree of concessionality of the overall funding-blend in line with

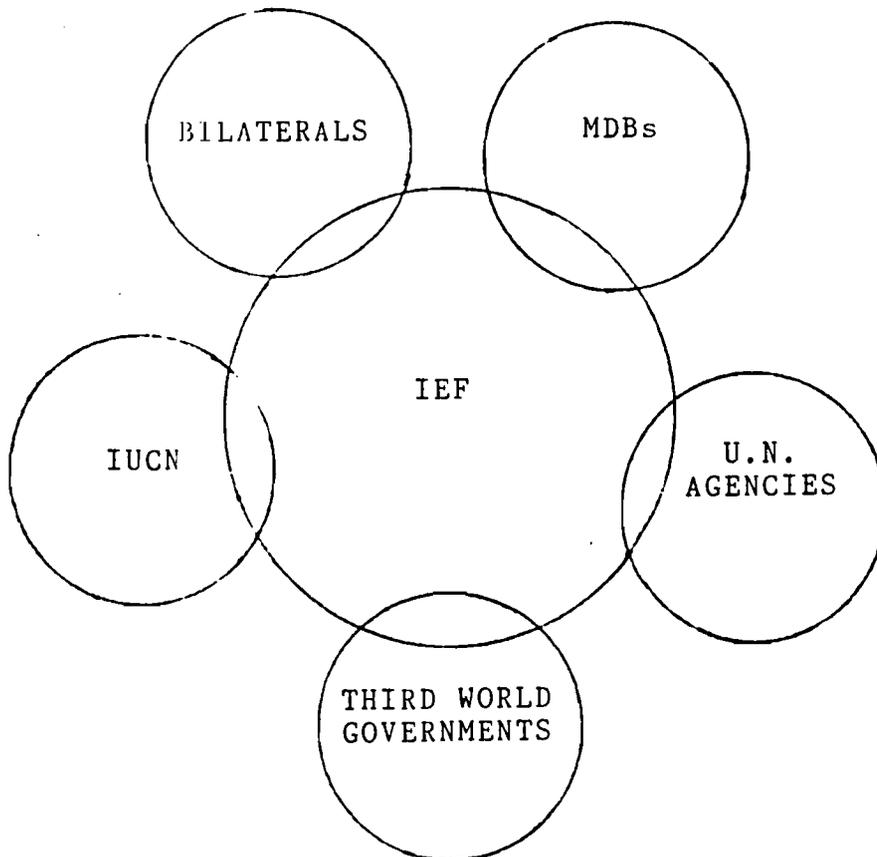
the economic rate of return of the conservation project package.

IEF will enhance the conservation financing potential of existing development agencies, rather than function as a separate entity for conservation financing. It will provide a vehicle through which the increased commitment and sense of urgency expressed by political leaders of the industrial countries can be realized, through allocations in addition to current development assistance budgets.

2.2.2 Setting up an International Environmental Facility

The IEF would have the character of conservation project assistance program. The Facility would be a joint venture of the OECD's bilateral development agencies and the multilateral development agencies in collaboration with international NGO's and Third World governments. It would facilitate the preparation and realization of sustainable development projects with a strong natural resource maintenance component ("conservation projects") with financing by the bilateral and multilateral development agencies. Set up jointly by these agencies, the IEF's annual budget would be covered through user fees charged on the projects generated and monitored.

The IEF's basic function would be to help identify, design, and finance sound conservation projects in the Third World. Its program of environmental projects will be guided by its Governing Board, which will include not only the Multilaterals (World Bank, IDB, AsDB, AfDB, UNDP, UNEP, FAO, UNESCO) and Bilaterals, but also a representation of the Third World governments, and IUCN (see Chart.) The membership of the Board would be designed to promote the development of a North-South consensus on IEF's conservation financing agenda and efficient implementation of this agenda.



As discussed in Chapter 1, unmet core conservation needs amount to well over \$2 billion per annum. (The extent to which this is a low estimate becomes clear when it is realized that this amounts to no more than 1/10 of one percent of the Third World's GNP.) It ought to be considered that IEF's program start off with commitments for the first five years by the OECD governments to finance on the order of \$ 3 billion in additional conservation projects. The staff and budget implications of the five-year target of \$ 3 billion are discussed in subsection 2.2.3.

IEF would have its own multidisciplinary staff that could bridge the fields of development finance and ecology. The staff will play a catalytic role in preparing and financing conservation projects. Its staff would be familiar with the operations of all the agencies with which it has to deal: the bilateral and multilateral development agencies, including the UN family of organizations, the Southern governments, private sector in North and South, and the NGO community. IEF would not only seek close working cooperation with these organizations, but also draw upon their staff by deputation and for short term mission assignments. This would allow IEF to keep its core overhead to a minimum.

For efficiency's sake, it would be desirable for IEF to be housed at one of its sponsor organizations, and the World Bank as

the largest multilateral development institution would seem to be the natural candidate. The arrangement would have to allow IEF to bridge the interests of bilaterals and multilaterals, as well as those of the recipient countries in the South. Consequently, it is important that the efficient functioning of IEF would not impair its neutral interagency character.

2.2.3 Funding of IEF and its Program

The creation of the IEF, to increase the supply of sound conservation projects in the Third World, would call for a twofold commitment from the OECD governments: first, through project-related fees a contribution of \$10 million per annum by the fifth year to cover IEF's operating budget; and, second, additional financing for up to \$3 billion in projects that the IEF will prepare for implementation over a five-year period.

The proposal would call for an International Environmental Facility, rather than Multilateral Environmental Facility to permit the Facility to be created on relatively short notice. Negotiating a complete multilateral agreement with all parties in North and South would be a time consuming process. Instead, setting up an IEF with a few leading bilaterals and multilaterals as founding sponsors will permit the speedy start

called for by the serious underfunding of conservation projects in the Third World.

Such an interagency facility, paid for jointly through user fees by bilateral and multilateral agencies has a precedent in the Energy Sector Management Assistance Program (ESMAP) that was set up by the World Bank and UNDP in 1983 to further the development of a pipeline of well-designed energy projects. ESMAP's overhead costs are largely "projectized" , i.e. tagged on to the costs of specific projects that are funded by project donors.

Appendix A presents a simulation of the proposed IEF in its first five years of operation. It shows that, under a reasonable scenario, IEF can generate \$ 500 million per year in conservation projects, cover its expenses through a small user fee, and keep its staff to about 100 people.

A second example of how a relatively small staff can generate a large project volume is the International Fund for Agricultural Development (IFAD), set up by OPEC and the industrialized countries in 1978 to promote rural agricultural development. Over the last ten years, it has, with a staff of less than a hundred, financed some \$10 billion worth of projects, which included \$7.5 billion in co-financing from other funding sources. Another example is the FAO/World Bank

Cooperative Program that was set up to help in agricultural project preparation and sector policy planning work. The program was broadened into an Investment Center to support the work of the Regional Development Banks, IFAD, and commercial banks. Over a 20-year period and with a staff of about 60, the FAO Investment Center has generated nearly 500 projects that resulted in a \$ 23 billion funding flow.

2.2.4 IEF as a Catalyst

IEF would focus on development projects that help conserve the country's natural resource base, rather than purely preservationist projects. Thus, it will look at the expected return of the overall project package, rather than at the return of specific conservation oriented components.

In its catalytic role, the IEF would deliver various intermediary services to Southern governments, multilaterals, bilaterals, and NGOs. These services would include helping to identify potential conservation projects, and finding technical and financial support for their preparation. To promote the development of sound conservation projects, IEF would build up an international inventory of the information that is required to put together proposals --by developing country, sector, development institution, and donor country. The inventory would

also include information on projects that successfully reconcile the people's development needs with conservation of the natural resource base. Thus, IEF would function in the first instance as an interagency project preparation facility, helping to put into action the environmental strategies that currently are being developed. One of its very first tasks could be to support the Emergency Action Plan for Critical Protected Areas, including the so-called "hot spots" that require immediate action.

As important as its project preparation work would be, IEF's catalytic role in securing project finance, from one or more sources, is to enable the package's overall cost of capital to match the economic return of the project. Thus, for example, the IEF would seek grant finance for preservationist project components, loan financing for economic development activities, and private investors for components that are commercially viable. It could help to attract private funds by involving co-financing and guarantees from agencies such as OPIC, IFC, MIGA, and the Nordic Investment Bank. The typical project would be of a sustainable development nature, with some components that focus primarily on resource conservation, and other components that would be more development-oriented. IEF would make sure that these various parts were taken up by the appropriate agencies. Moreover, when the funders wish, it could track implementation and evaluate specific project results. While some of this would

be done by IEF's own staff, much of it would be commissioned to agency staff or independent consultants.

Over time, IEF's staff would build up increasing expertise in various technical aspects inherent to the ecological and financial design of conservation project packages. On the environmental side, it would insure that state of the art insights in the sustainability of certain development projects would be reflected in the conservation project design.

Likewise, on the financial side, IEF would bring expertise in tax, accounting, foreign exchange, and other banking aspects to conservation financing. These activities should help bring the private sector (companies, foundations, NGOs) into a domain thus far left largely to the public sector. In general, IEF-sponsored projects would include domestic financing by national government agencies, NGOs, or private companies, so as to leverage foreign monies with domestic currency contributions. It is generally recognized that local commitment, as evidenced by the allocation of local funds to the project, is essential for the successful implementation of any project.

2.3 A CONSERVATION PILOT INVESTMENT PROGRAM - "ECOVEST"

2.3.1 Introduction

As discussed in Chapter 1, maintaining rangelands, mangroves, forests, and other important ecosystems will depend on developing activities that benefit the users, while providing them monetary incentives to work in harmony with nature. In fact, many conservation activities are capable of generating a flow of revenues or even profits. Yet, they cannot readily attract private commercial capital or even development finance, for reasons discussed above.

Intermediation similar to that provided by an investment bank is needed to develop conservation pilot projects in a way which makes them attractive for private sector investment. The intermediary would arrange financing of the revenue-generating pilot projects by blending concessional (grant) funds, commercial finance, and private direct investment. Thus, such activities could be funded at a below-market average cost of capital, or be provided seed money to prove that they ultimately could become commercially self-sustaining. It would necessarily represent a public/private partnership in support of natural resource conservation. ECOVEST's special expertise and interest would have to be in the area of ecological investment, pioneering

activities that promote sustainable resource use and that have the potential to be financially self-sustaining.

2.3.2 Five-Year Objective

The establishment of a conservation project pilot investment program, possibly affiliated with an existing institution, should be given serious consideration. Over a five-year period, the program would demonstrate the commercial potential of a number of pilot projects, involving private sector investment. It would also demonstrate how a financial catalyst can contribute to sustainable development in developing countries, through the development of effective and productive pilot conservation projects. Once viability of the pilot projects has been demonstrated on a commercial scale, a program for replication on a large-scale could be developed and incorporated into national development plans.

The program would consider investments in such resource-dependent activities as the following:

- Wildlife utilization: replicating existing models for intensive farming of wildlife (ostrich, crocodile), for less intensive integration of wildlife with cattle

(game ranching), and models involving more remote areas (tourism, trophy hunting and communal land schemes): (4 pilots involving different uses/countries in Africa).

- Mangrove utilization: demonstrating that shrimp mariculture can be developed more productively outside mangrove habitat, which in turn can develop other marine products: (2/3 pilots in Ecuador).
- Private sector reforestation schemes: (2 pilots).
- Development of non-timber forest products, that can be harvested sustainably from tropical forests: (2 pilots in 2 countries).
- Eco-tourism: developing projects demonstrating how protected areas can be better maintained by introducing revenue-generating activities: (3 pilots involving different applications/countries).
- Developing National Conservation Pilot Investment Programs: introducing financial entities at the national level to harness financial resources from the public and private sectors to finance conservation projects: (2 pilots in 2 countries).

Appendix B presents a summary of a five-year pilot project investment program that ought to be considered for ECOVEST. It suggests that some 14 pilots could be implemented over a five year period at a cost of around \$25 million. The Appendix also presents a brief description of the rationale for the activities selected for this program, and the progress achieved to date on various pilots.

2.3.3 Funding of "ECOVEST"

Equity capital of \$25 million to fund the five-year program of Ecovest would have to be supplied largely by governments and/or development institutions. It is expected that profits will be earned on a number of the projects by the end of the five-year program. These could be used to reduce outside funding or set aside for future projects. Initial funding from development assistance agencies and private foundations appear to be the most likely possibility.

Financing packages would be focused on ways of bringing in the private sector. Some of these packages would be at favorable terms as they would involve developing local sources of finance including access to blocked currencies, PL 480 funds, funds exchanged for debt-for-nature swaps etc..

2.3.4 Implementation

In deciding on how to select appropriate activities, ECOVEST would identify projects:

- which depend directly on the natural resource base;
- which would benefit the local population economically;
- which would demonstrate that conservation can pay;
- which would provide successful models that could be replicated;
- in which the private sector played an important part;
- which were being bypassed by development assistance;
and
- which offered reasonably quick results.

Through the successful development of such pilot projects, Ecovest can demonstrate the potential for restoration and protection of ecosystems in the context of sustainable development programs. In this manner, it will show how the

creation of a financial intermediary can bring additional funds to the development process.

With the funding in place, the ECOVEST program could start to be implemented without delay since a number of potential pilot projects for the program have already been identified.

2.3.5 ECOVEST Broker Services

ECOVEST's pilot projects can be expected to arouse interest among potential entrepreneurs in similar projects which cannot be accommodated within its program. In such cases, it is envisaged that ECOVEST would put its experience to use by offering, on a fee basis, broker services to help put financing packages together for additional conservation projects. Ecovest's broker services would support activities conducive to sustainable resource use, such as those mentioned above. It would develop internal staff capabilities in these fields, as well as drawing on NGOs, private entrepreneurs, and other project originators.

2.4 LINKING CONSERVATION OBJECTIVES TO THIRD WORLD DEBT REDUCTION

The debt-for-nature swaps discussed in the previous section are on the increase, but the sums involved are relatively small, a few million dollars per swap. In the absence of strong tax or regulatory inducements, mechanisms that rely on donations of private debt or secondary purchases by public-spirited nonprofit organizations are unlikely to generate sufficient funds to affect either the overall burden of debt or the overall gap in conservation financing in the Third World. However, other options based on debt reduction could have considerably more impact.

In many Third World countries, the economic stagnation and balance of payments pressures imposed by the debt crisis have exacerbated natural resource degradation. While income has stagnated or declined in heavily indebted countries for almost a decade, labor forces have increased by 25-30 percent. Many of these jobless households 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 powerful ranchers buys them only a short

period of economic return before the land becomes totally unproductive.

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. Yet, it is important that policies to ensure sustainable natural resource use be part of any future agenda of debt restructuring, both at the sectoral and the national level. Moreover, policy improvement in resource sectors can be used to provide new revenues for sustainable development.

2.4.1 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. For example, recent studies¹⁷ have shown that tax, credit, and other economic policies affecting the forest sector in many tropical 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 forest and biological diversity. Documented fiscal losses range

from \$500 million to over \$1 billion per year in such large 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 such competing land uses 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 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.¹⁸

4) Policy reform will also raise earnings by stimulating greater efficiency in logging and processing, 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.¹⁹ At the same time, abandoning subsidies to cattle ranches frees the same amount in government expenditures.

6) Increased government revenues from the forest sector, by reducing fiscal deficits and domestic expenditures, will help indirectly in generating additional net foreign exchange earnings.

A recent study of forest policy in the Ivory Coast suggested that potential additional foreign exchange earnings of approximately US \$150 million per year would come through a combination of these mechanisms.

The World Bank and other development lending agencies have begun to make sector loans for improved forest management. Such

loans are now in the pipeline for Indonesia, the Philippines, China, Sri Lanka, Ghana, the Ivory Coast, Kenya, and the Sudan. In addition, the Tropical Forestry Action Plan is generating national action plans in over fifty developing countries, which could lead to more forest sector loans.

These sectoral loan agreements typically promote improved natural forest management, increased investment in forest plantations, and stronger forest conservation. Loan agreements generally provide for 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 in heavily indebted countries with extensive tropical forests. Since many such countries are not eligible for concessional IDA finance, they are reluctant to incur additional debt on harder terms, especially for less immediate priorities such as forest conservation. Heavily indebted countries are even less willing to make politically difficult policy changes when the principal beneficiaries will be the foreign creditors who will carry off a

large part of the additional revenues in increased net debt service outflows.²⁰

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 is increasing. The average discount on developing country debt to commercial banks has grown steadily to more than 50 percent. Developing countries benefit from debt buybacks by capturing this market discount. Recently, Chile repurchased \$500 million of external debt tendered by its creditors at an average discount of 46 percent, using exchange reserves generated by rising copper prices.

In the past, lenders have restricted buybacks through clauses in syndication agreements²¹, 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, lender resistance now seems to be less. If the foreign exchange earmarked for buybacks is generated by steps 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 earmarked for debt repurchases, lenders gain further 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 much less risky than the original debt.

The World Bank and other development lenders can facilitate the linkage of forest policy change and debt reduction in several ways:

- a. First, the development lending agency, such as the World Bank, would analyze the possibilities for policy reform and institutional strengthening in the forest sector, in preparation for a sectoral adjustment loan. The analysis would project potential fiscal gains 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 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 some of its sector adjustment loan to collateralize those bonds, or to provide a portion of the loan in the form of guarantees or other "credit enhancement" devices.²²

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 device 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, which are helped to reduce the burden of debt; commercial banks, which see the value of their claims increased; and public lending agencies, which help to halt the loss of tropical forests while 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.

2.4.2 Linking Overall Debt Reduction to Sustainable Development

Management of Third World debt problems has relied on the country-by-country "menu" approaches favored by the previous US administration, most commercial banks, and some heavily indebted Third World governments. The foregoing options have suggested how reduction in commercial debt within this country-by-country framework can provide conservation financing, not only through debt-for-nature swaps, but also through debt buybacks linked to sectoral policy changes (and through debt-equity swaps linked to ecologically sound regional development.)

At the same time, the likelihood is growing that this country-by-country approach to Third World debt management will be supplanted by an overall restructuring plan. For most heavily indebted countries, net flows of foreign capital are now significantly negative, because new lending from commercial sources has declined. Nonetheless, debt and debt-service ratios have scarcely improved over the decade for heavily indebted or low-income countries. A significant recession in the United States, or a forced increase in real interest rates to defend the US dollar exchange rate, and for the oil exporting debtor countries, a further drop in oil prices, could create imminent risks of Third World default that would prevent further "muddling-through." Statements by heads of national governments at the Toronto Economic Summit, the willingness of the incoming US administration to explore fresh approaches, forgiveness of bilateral public debt owed to several OECD governments by low income African countries, and increasing unity among major Third World debtors on the need for significant debt reduction, all indicate a growing interest in broader approaches.

Many overall debt restructuring plans have been advanced. All such plans have called for economic policy conditionality monitored by some international institution (usually the World Bank, alone or with the IMF) to ensure appropriate debt and balance of payments policy actions by the countries receiving debt relief.

While such overall debt restructuring plans were being developed, considerable work has also been done to identify the kinds of changes in economic policies and development priorities that are essential to reduce natural resource degradation. For the most part, these changes also contribute to macroeconomic objectives by reducing fiscal burdens and economic losses. Examples include:

- a) eliminating energy subsidies and emphasizing least-cost energy investment strategies;
- b) reducing agricultural water subsidies to encourage more efficient use, and emphasizing better management and rehabilitation of existing irrigation systems over costly new projects;
- c) reducing fertilizer and pesticide subsidies and reallocating development efforts toward sustainable small farmer technologies;
- 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) rerouting development projects away from forested areas, and raising expenditures and incentives for reforestation.

This policy agenda should be adopted as an integral part of any overall or broad-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.

A first step is possible even before any overall restructuring plan is considered. 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. 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 conditionalities that are ecologically and financially viable.

2.5 A WORLD ENVIRONMENTAL FUND FINANCED BY LEVIES ON GREENHOUSE GASES

The creation of a World Environmental Fund ought also to be seriously considered by the world community. It would be designed to help finance the maintenance of Third World ecosystems and to provide a funding source for new environmental initiatives. Its administration could be placed in the hands of the United Nations Development Programme, since it serves as the coordinating agency of the specialized UN agencies. This World Environmental Fund, in the order of \$1 billion per year, would be financed primarily by allocations from coordinated national levies on greenhouse gases or their sources, notably chlorofluorocarbons and fossil fuels.

Global climate change poses a huge potential risk to sustainable development and biological resources. Rising sea levels and increased flooding will imperil coastal settlements, as well as wetlands and coral reefs. Shifts in temperature and rainfall patterns will disrupt irrigated and rainfed agriculture. Abrupt shifts in habitat will endanger plants and animals unable to adapt or migrate quickly. For example, protected areas that are enclaves within developed regions, and therefore unable to shift with the changing climate, may suffer widespread extinction of species.

Depletion of stratospheric ozone poses equally broad environmental risks to human health, to agricultural production, and to sensitive marine and terrestrial ecosystems.

At the same time, large-scale deforestation and conversion to agriculture, by removing a carbon "sink" and adding to emissions of methane and nitrous oxides, contribute substantially to the global accumulation of greenhouse gases. Conservation of tropical forests can slow the process of climate change.

As pointed out in the introductory chapter of this report, global ecological and economic interdependence have become impossible to ignore. Energy use and industrial activity in the North affect the possibilities for sustainable development in the South. Destruction of natural resources in the South affect the climate and welfare of the North. 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 industrial countries, just as the economic policies of the industrial countries heavily influence development possibilities for low and middle income countries. The need for international cooperation is inescapable.

2.5.2 Potential sources of revenue

Among the OECD countries and many developing countries the "polluter pays" principle has been adopted 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.²³ 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.

ICFP has been instructed to seek additional sources of conservation financing. Additionality is usually interpreted by each agency to mean an increase in the resources in its budget, (often at some other agency's expense) but true additionality can only be achieved globally by expanding the size of the GNP pie: i.e., by increasing aggregate productivity and income. Charges

on greenhouse gases will raise productivity by encouraging greater efficiency in the use of fossil fuels, more rapid adoption of alternative energy sources and CFC substitutes, and reduced environmental damage.

Proposals similar to this one are not new. The UN Plan of Action to Combat Desertification in 1977 contained financing mechanisms based on taxes on the global commons and natural resources that entered international trade. The principle of automatic transfers for environmental programs was officially accepted but never implemented.²⁴ Levies were recommended by the Brandt Commission on International Development²⁵ and more recently by the World Commission on Environment and Development. It considered "... 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 General Assembly."²⁶ Likewise, in June 1988, the International Conference on the Changing Atmosphere--Implications for Global Security, in Toronto, called on governments of industrialized countries to establish a world fund for atmospheric stabilization, which would promote forest conservation in developing countries, financed in part by levies on fossil fuel consumption.

Several specific proposals have been made to tax greenhouse gases on a national or international level. It has been proposed

that the recent Montreal Convention to reduce use of CFCs be implemented by producing countries through excise taxes on CFCs at internationally harmonized rates high enough to reduce consumption to agreed levels. Alternatively, production quotas, which are preferred by industry, could be sold or auctioned by governments of producing countries to capture the scarcity rents that will result in the short run from supply restrictions. Estimates prepared for the U.S. Environmental Protection Agency suggest that, with a rapid phase-out of CFC, such auctions would produce revenues of approximately U.S. \$1 billion per year through the year 2000 in the United States alone. Since the U.S. accounts for about 30 percent of the total world production of CFCs, coordinated international policies to capture these scarcity rents 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. At present, the U.S. Environmental Protection Agency and Office of Management and Budget are considering a hybrid system, consisting of allocated production quotas combined with a levy on producers. The incoming U.S. administration has included such a proposal in its initial budget proposal to Congress, which could assume a leadership position by adopting this policy and allocating a portion of the revenues to initiate a world environmental fund. Other industrial countries should consider similar policies.

A carbon tax is under consideration by the U.S. Congressional Budget Office. Any levy with significant incentive effects on consumers and producers would clearly generate large 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 U.S. \$12 billion per year. If applied in all OECD countries, such a levy would produce more than U.S. \$25 billion in revenues annually.

Most discussions of 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. However, the revenues generated by fiscal levies designed to suppress the greenhouse effect would still provide ample revenue base from which a world environmental fund could be financed. In addition, tax credits or rebates could be offered to enterprises that make approved environmental investments, such as reforestation projects.²⁷

Experience since the oil price collapse of the mid-1980s demonstrates that without strong price signals neither politicians nor businessmen 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 interventions are an essential component of a policy to slow down global climate change.

2.5.3 Fund Management and Spending Targets

The United Nations Development Programme ought to be considered as an appropriate administrative agency for a world environmental fund. 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."²⁸ Within the United Nations, the UNDP is the agency best able to allocate funds to the various specialized agencies and coordinate their development activities.

The UN specialized agencies have ongoing environmental programs that are now seriously underfunded. The United Nations Environmental Program was charged with stimulating, coordinating, and providing policy guidance for environmental action within and outside the UN system. In the future, its key responsibility will include worldwide environmental monitoring and assessment, and promoting international agreements to deal with global and regional environmental problems. 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, such as its Clearinghouse Project, are currently weak and underfunded.

Similarly, the Food and Agriculture Organization within the UN system has extensive responsibilities for protection of the renewable resource base for agriculture, 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 preservation 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 UNESCO, have ongoing and underfunded programs of direct relevance to biological conservation and sustainable development. The World Environmental 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.

The International Union for the Conservation of Nature and Natural Resources (IUCN) has proposed a general international convention for the preservation of genetic resources. Its secretariat and activities could be financed from such a fund. A coalition of non-governmental organizations, including IUCN and the World Resources Institute, are developing a global strategy for the conservation of biodiversity to promote coordinated international efforts to prevent the destruction of critical ecosystems. Such NGO efforts and others could also be supported by a World Environmental Fund.

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2. Yusuf J. Ahmad and Mohamed Kassas, Desertification: Financial Support for the Biosphere (Hodder and Stoughton, London, 1987).
3. Jeffrey A. Sayer, Jeffrey A. McNeely, and Simon N. Stuart, "Enhancing the Contribution of Conservation Biology to Conservation Practice: A Perspective from the Old World Tropics," Paper Presented to the 2nd Annual Conference of the Society for Conservation Biology, Davis, California, 19 August 1988.
4. World Bank Environment Department, "A Proposal to Establish a Biological Diversity Project Preparation Facility for Strengthening the Bank and other Donor Agency Operational Involvement in Conservation of Biodiversity," draft discussion paper, 1988.
5. Organisation for Economic Co-operation and Development / Development Assistance Committee, "Programmes and Arrangements by Aid Donors to Address Problems of the Environment," unpublished, Paris, November, 1988.
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7. World Wide Fund for Nature (WWF), "The Korup Project, Cameroon," WWF Publication 3206/7, WWF, Gland, Switzerland, 1987.
8. 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.
9. Randall Curtis, Personal Communication, January 1989.
10. Charles Rast, personal communication, January 1989.
11. 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.
12. Montague Yudelman, "Research and the Tropical Ecology," paper prepared for the International Conservation Financing Project, November, 1988.
13. Paul Faeth, personal communication, January 1989.

14. IUCN is currently studying the feasibility of taxing companies that use "biomaterials" as a way of creating a global fund for the conservation of biodiversity.

15. UK Timber Trade Federation with The Nederlandse Houtbond, "The Development of a Policy to Assist in Promoting the International Trade in Tropical Timber and the Conservation and Development of Humid Tropical Forests with regard to The International Tropical Timber Organisation," unpublished, September, 1988.

16. World Tourism Organisation (WTO), Yearbook of Tourism Statistics, Vol. 1, 1986.

17. Robert Repetto, The Forest for the Trees? Government Policy and the Misuse of Forest Resources, (World Resources Institute, Washington, D.C., 1988).

18. In Indonesia, the Philippines, and the Ivory Coast, 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.

19. A conservative estimate of the value of merchantable timber burned in a single year in the Brazilian Amazon is approximately U.S. \$1 billion.

20. In negotiations over reschedulings and new money packages, the debtor country's debt servicing capacity is a principal element.

21. 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.

22. 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).

23. See OECD, Environment Directorate, The Application of Economic Instruments for Environmental Protection in OECD Member Countries: Draft Final Report, Paris, June, 1988.

24. United Nations, "Study on Financing the UN Plan of Action to Combat Desertification: Report of the Secretary General," UN General Assembly Document A/35/396; New York, 1980.

25. Independent Commission on International Development Issues, North-South: A Programme for Survival (Pan Books, London, 1980); Common Cause: North-South Cooperation for World Recovery (Pan Books, London, 1983).

26. The World Commission on Environment and Development, Our Common Future (Oxford University Press, 1987).

27. As mentioned above, one U.S. electric power company has already invested in forestry projects in developing countries to offset the carbon emissions.

28. World Commission on Environment and Development, Our Common Future.

IEF

APPENDIX A

It is assumed that the average environmental component of the conservation project is in the order of \$ 5 million. Thus, if that component were to be typically 1/3 of the project, then the simulation conceives of typical overall project size on the order of \$ 15 million. Other assumptions include: (1) number of projects generated would rise from 20 in the first year to 100 in the fifth year, (2) one out of three projects considered comes to fruition, (3) rejected deals take half a man month of professional staff time, worked out deals take three man months, (4) monitoring of projects in implementation takes half a man month per year, (5) professional staff is available for project development and monitoring for 10 months a year.

The appendix spells out the staffing levels which follow from these assumptions, with a headcount rising from 34 in year one to 116 in year five. It would have to expand further to the extent that its annual project generation target were to be increased over \$ 500 million a year. Under market salary assumptions and other overhead and travel costs at 66% of overall compensation costs, IEF's expenses are simulated to rise from \$ 2.5 million in year one to \$ 9.5 million in year five. On the income side, it is assumed that IEF charges a user fee of 1.5% on (the environmental part of) projects generated, and 1/4% per annum on the monitoring of the projects, assumed to have a 5 year life span. Under these assumptions, IEF would be projected to have small (less than \$ 1 million) deficits in the first two

years, break even in year three, and small profits (up to \$ 1 million) in years four and five. It is clear that many variations of these assumptions are conceivable.

INTERNATIONAL ENVIRONMENTAL FACILITY

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Production And Manpower Assuaptions (UD\$000's)

	(\$000's) Year 1	(\$000's) Year 2	(\$000's) Year 3	(\$000's) Year 4	(\$000's) Year 5
Av. Size Transaction (000's)	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
No. Of Deals Completed/Yr	20	40	60	80	100
Cumulative Deals Done	20	60	120	200	300
Deals Done/Deals Reviewed	33%	33%	33%	33%	33%
Total Deals Reviewed	60	120	180	240	300
Mos. Requ. - Rejected Deals	0.50	0.50	0.50	0.50	0.50
Months Requ. For Done Deals	3	3	3	3	3
Months Spent-Rejected Deals	20	40	60	80	100
Months Spent-Done Deals	60	120	180	240	300
Avg. Deals On Books For Year	10	40	90	160	250
Months Per Deal Monitored	0.5	0.5	0.5	0.5	0.5
Mos. Needed For Monitoring/Yr	5.00	20.00	45.00	80.00	125.00
Total Man Months Spent:					
Turned Down Deals	20.00	40.00	60.00	80.00	100.00
New Deals Done	60.00	120.00	180.00	240.00	300.00
Monitoring	5.00	20.00	45.00	80.00	125.00
Total Man Months Spent:	85.00	180.00	285.00	400.00	525.00
Staff Required @ 10 Mos/Yr	8.50	18.00	28.50	40.00	52.50
Review New Deals	8	16	24	32	40
Monitoring	1	2	5	8	13

BUDGET

Income Assumptions

- An one-time user fee of 1.5% per annum will be charged to the recipients of funds at closing.
- An annual monitoring/advisory fee of 0.25% per annum will be charged to projects for ongoing services.

Av. Size Transaction	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Deals Done Per Year	20	40	60	80	100
Annual Disbursements	\$100,000	\$200,000	\$300,000	\$400,000	\$500,000
Cumulative Deals Done	20	60	120	200	300
Est. Funds Under Mgt	\$100,000	\$300,000	\$600,000	\$1,000,000	\$1,500,000
One Time 1.5% Fee Per Deal	1,500	3,000	4,500	6,000	7,500
Monitoring @ 0.25%	125	500	1,125	2,000	3,125

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Expense Assumptions

	---Year One---			---Year Three---			---Year Five---		
	Dept Head	Prof. Staff	Support Staff	Dept Head	Prof. Staff	Support Staff	Dept Head	Prof. Staff	Support Staff
CEO	1		1	1		2	1		2
COO				1	1	1	1	1	1
Treasurer/Accounting	1		2	1	1	3	1	1	4
Legal Counsel	1		1	1	1	2	1	1	2
Admin./Human Resources	1		2	1		3	1		4
Funding: Bilateral		1	1		1	0		2	2
Funding: Multinational		1	1		1	1		2	2
Funding: Pvt Sector		1	1		1	1		2	2
Project Analysts - Financial	1	4	3	1	12	4	1	20	7
Proj. Analysts - Technical	1	4	3	1	12	4	1	20	7
Proj. Monitoring	1		1	1	5	2	1	13	5
Tech. Advisor - Buffer Zone	1			1		1	1		1
Sci. Advisor - Forestry					1	1		1	1
Sci. Adv. - Lowld/Mar./Wetlds					1	1		1	1
Sci. Adv. - Rangelands					1	1		1	1
Subtotal Staff	8	11	15	9	38	26	9	65	42
Total Staff		34			73			116	
Inflation Factor				5%	5%	5%	5%	5%	5%
Compensation Per Person (\$K)	75.0	45.0	27.5	82.7	49.6	30.3	91.2	54.7	33.4
Subtotal Compensation	\$600	\$495	\$413	\$744	\$1,685	\$788	\$820	\$3,555	\$1,404
Total Compensation			1,502			3,418			5,780
Other Overhead & Travel (@66% Salaries)			1,005			2,279			3,653
Total Expenses			\$2,513			\$5,696			\$9,633

Projected Income & Expense Statement
(US\$000's)

	Year 1	Year 2	Year 3	Year 4	Year 5
Total Fees	\$1,625	\$3,500	\$5,625	\$6,000	\$10,625
Total Expenses	2,513	4,130	5,696	7,780	9,633
Surplus/(Deficit)	(\$888)	(\$630)	(\$71)	\$220	\$992

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ECOVEST

APPENDIX B

The following summarizes the costs of the five-year program, the funding of which would need to be committed by donors before implementation:

<u>Project</u>	<u>Salaries</u> <u>(\$000's)</u>	<u>Overheads</u> <u>(\$000's)</u>	<u>Feas.</u> <u>Studies</u> <u>(\$000's)</u>	<u>Equity</u> <u>(\$000's)</u>	<u>Total</u> <u>(\$000's)</u>
		(Note 1)	(Note 2)	(Note 3)	
GAME RANCHING (4 pilots)	1,900	700	2,100	4,300	9,000
SHRIMP/MANGROVE (2/3 pilots)	400	200	700	300	1,600
REFORESTATION (2 pilots)	500	200	1,100	---	1,800
FOREST PRODUCTS (2 pilots)	700	300	1,000	1,100	3,100
ECO-TOURISM (3 pilots)	1,100	400	1,600	1,900	5,000
NAT. CONS. P. I. P. (2 pilots)	---	---	1,000	1,100	2,100
	<u>4,600</u>	<u>1,800</u>	<u>7,500</u>	<u>8,700</u>	<u>22,600</u>
HEAD OFFICE (Note 4)	<u>2,200</u>	<u>1,500</u>	<u>-</u>	<u>-</u>	<u>3,700</u>
TOTALS	<u>\$ 6,800</u>	<u>\$3,300</u>	<u>\$7,500</u>	<u>\$8,700</u>	<u>\$26,300</u>

NOTE 1 - Pilot projects will require full-time, on-site management and coordination with head office

NOTE 2 - Feasibility studies are estimated to cost \$500,000 each. This includes full pre-investment costs and marketing studies: it also reflects the comparatively large size of the pilot projects.

NOTE 3 - It is anticipated that private-sector, equity investors in the above pilots will require subsidized equity funding. The above equity capital estimates represent a 50-50 split of equity between the private sector and ECOVEST. This equity is assumed to finance 40 % of the total project cost, the remainder will be covered by loans. Every dollar of equity, therefore, that is supplied to a project under this program will be matched dollar-for-dollar with private-sector investment. By year five, most of the above projects will be profitable (with the exception of reforestation).

NOTE 4 - Head office will constitute a small co-ordinating and monitoring office. Its location and structure, to some extent, will reflect the identity of its sponsors.

APPENDIX B CONTINUEDECOVEST-PILOT PROJECTS
INDEX

	<u>PAGE</u>
A. WILDLIFE UTILIZATION	4
B. MANGROVE UTILIZATION	5
C. REFORESTATION	6
D. NON-LUMBER FOREST PRODUCTS	7
E. ECO-TOURISM	8
F. INTEGRATED PLANNING TECHNOLOGY	9
G. FINANCIAL PROJECTIONS	10

A. WILDLIFE UTILIZATION:

Introduction:

Successful examples exist of multispecies systems of wildlife utilization, including mixes of domestic livestock and wildlife, as an ecologically and economically sustainable option for land use in Africa. However, an activity which could make a significant contribution to the rehabilitation of degrading rangelands (not to mention the preservation of wildlife), appears to be shunned by the development community.

Work Program:

After validating the financial viability of certain existing game ranching operations' (e.g. in Kenya, Zimbabwe and Namibia), Ecovest would develop new projects on a commercial basis (both on private and communal land) in three or four African countries. Discussions have already commenced with the governments of Tanzania and Botswana (in the latter country ICFP is working in cooperation with WWF(US)), and others. Meanwhile, the Overseas Private Investment Corporation (OPIC) has indicated interest in providing investment services to private-sector investors (including a major commercial bank), and ICFP has located several potential sources of project preparation finance.

Feasibility studies need to be prepared (including market surveys); investors found; financing arranged; and projects implemented in conjunction with local participants.

B. MANGROVE UTILIZATION

Introduction

Mangrove habitat has been particularly badly hit by the development of shrimp mariculture. In some areas in Ecuador for instance, where shrimp farms have been established, almost all the mangrove habitat has disappeared, seriously depleting the marine life offshore. The industry, which is highly profitable and a big, foreign-exchange earner, will continue to expand and, inevitably, destroy more mangrove habitat, unless measures are taken to prevent further destruction.

Work Program

A recent review of the industry in Ecuador by ICFP indicates that mangrove habitat is not the most suitable for shrimp culture. Moreover, apart from being an integral component of a highly-productive, coastal marine eco-system, mangrove habitat contains the potential for development of other profitable and sustainable products (e.g. crabs, molluscs, oysters, etc.)

It is proposed that three test farms be set up in separate parts of Ecuador to demonstrate that shrimp grow-out ponds built behind mangrove habitat are more profitable, and that semi-intensive farming is more profitable still. Simultaneously, research would determine more profitable outlets for products cultivated on a sustainable basis in mangroves. ICFP has been working with the University of Rhode Island (in conjunction with

US AID's Coastal Resources Management Project in Ecuador), the Ministry of Fisheries and others regarding the above proposals.

OPIC has expressed an interest in the development of a more sustainable industry. With their assistance, Ecovest would examine means to encourage certain lead shrimp farmers to develop these initiatives, in conjunction with local research institutes, foundations and local government.

C. REFORESTATION

Introduction

In most Third World countries reforestation lags well behind timber-felling. Moreover, productivity of reforestation programs remains disappointing in many instances. The potential for a role for the private timber industry in government schemes needs to be explored.

Work Program

Fiscal incentives and the provision of long-term finance (perhaps by blending bilateral with multilateral finance) could provide appropriate conditions to attract more interest from the private sector and make schemes more productive. Initial discussions have been held in Ecuador with Durini, which has already embarked upon significant reforestation projects.

Successful models exist in Chile (and to a lesser extent, Brazil). Ecovest would research these in conjunction with the World Bank and other financial institutions, with a view to

replicating successful models elsewhere. Tax incentives would need to be developed with individual governments.

D. NON-LUMBER FOREST PRODUCTS

Introduction:

Obtaining revenues and livelihoods from non-lumber products holds important potential for sustainable development. Whereas many examples exist, there are few examples where forests yield commercial returns which can compete with timber-felling, clearing for cash crops and other more conventional activities associated with development. Recent research in Peru and Malaysia (1) suggest that the potential for commercial returns from the cultivation of non-lumber products does in fact exist.

Work Program

Ecovest would develop local interest and set up production and marketing facilities once satisfactory feasibility studies have been accomplished.

1) details required

- Gary Hartschorn, Peru
- Salleh Mhd. Noor, Malaysia

E. ECO-TOURISM

Introduction:

Although some seven thousand protected areas exist throughout the world (2), comparatively few enjoy de facto protection, and most of those in developing countries that do, can attribute their survival to the revenue they earn from tourism. The development of eco-tourism therefore becomes important in the context of the conservation of protected areas.

Work Program:

Nature and adventure tours are some of the fastest growth areas in the travel/tourist industry. ICFP has held discussions with a number of parties to identify how to generate increased tourism, and therefore revenue, in national parks and other protected areas. For instance:

- The International Finance Corporation (IFC) has indicated that certain international hotel groups and tour operators are interested in developing eco-tourist facilities (e.g. in Madagascar, where eco-tourist facilities could be integrated with buffer-zone development plans, and in Ecuador where facilities could be developed in national parks for tourists returning from the Galapagos Islands).

2) World Resources 1988-89 lists over five thousand, by country (page 294).

- The Organization of American States (OAS), has identified some 130 Caribbean marine and coastal protected areas many of which "could become fully or partially self-financing by creative tourism infrastructure financing and use of tourist income." (3)

Ecovest would develop commercially-viable eco-tourist operations in the above locations on a join-venture basis with private-sector investors.

F. INTEGRATED PLANNING TECHNOLOGY:

Introduction and Work Program

ICFP is interested in further developing for the wildlife ranching industry (by its incorporation into pilot projects) a computerized technique known as Integrated Planning Technology. IPT enables management of ranching operations to plan and track goals, problems and variables for consideration in the use of and development of rangelands, thus demonstrating the environmental and economic costs and benefits of policy alternatives -- such as different mixes of wildlife and livestock. (This program, originally developed by U.S. AID and IIED, and already tested on a game ranch in Zimbabwe, where it is being developed further, contains excellent potential for a number of other related activities, e.g. land use planning, environmental impact

3) excerpts from "Marine Parks: A Mechanism of Self-Financing Resource Management" Washington, D.C., November, 1988, A report prepared for ICFP by the Department of Regional Development, OAS.

assessments, and identifying environmental indicators in preparation of national conservation strategies, e.g. the Botswana NCS).

MS.5:kp

GAME RANCHING:

	(\$000's)	(\$000's)	(\$000's)	(\$000's)	(\$000's)	(\$000's)
	Year 1	Year 2	Year 3	Year 4	Year 5	Total
	-----	-----	-----	-----	-----	-----
Assumptions						

# Sites Established	4					
Employees Per Site	1					
Total Site Employees	4					
Supervisor Per Site	1					
Supervisor at Head office	1					
Site Employee Salaries	\$25,000					
Site Supervisor Salary	\$45,000					
Head Office Supervisor	\$65,000					
Site Feas. Studies Completed	2	2				
Sites Needing Seed Capital		2	2			
Proj. Costs/Site (\$000's)	\$5,000					
% Debt Financed	60%					
% Equity Financed	40%					
Pct Equity For Seed (Note 1)	20%					
Feas. Study Costs/Site	\$500,000					
Cash Outflows						

Site Manpower costs	\$100	\$105	\$110	\$116	\$122	\$553
Site Supervisor costs	180	189	198	208	219	995
HQ Supervisor Costs	65	68	72	75	79	359
Site Overhead Costs	33	35	37	39	41	184
Site Supervisor overhead	60	63	66	69	73	332
HQ superv. overhead	22	23	24	25	26	120
Site Feas. Study Costs	1,000	1,050				2,050
Seed Capital Needed (Note 1)		2,100	2,205			4,305
	-----	-----	-----	-----	-----	-----
Total - Game Ranching Outflows	\$1,460	\$3,633	\$2,712	\$533	\$559	\$8,897
	=====	=====	=====	=====	=====	=====

Note 1: Seed equity provided for projects would be matched with equity from the private sector.

SHRIMP MARICULTURE

PILOT PROGRAM: ONE HECTARE PER POND/10 PONDS PER SITE

Assumptions	(\$000's) Year 1	(\$000's) Year 2	(\$000's) Year 3	(\$000's) Year 4	(\$000's) Year 5	(\$000's) Total
# Sites Established	3					
Managers Per Site	1					
Total Site Managers	3					
Headquarters Supervisors	1					
Overhead Factor (% salaries)	67%					
Salary for Site Managers	\$15,000					
Salary for supervisor	\$30,000					
Ponds Per Site	10					
Hectares Per Pond (Note 1)	1					
Hectares Per Site	10					
Total Hectares	30					
Land Cost Per HA (w/ Pumping)	\$6,000					
Constr. Costs/HA	\$4,000					
Total Site Employees	3					
Supervisor	1					
Site Feas. Studies Completed	1	0.2	0.2			
Sites Needing Land/Constr./Pumping	1	1	1			
Cumulative Sites Constructed	1	2	3	3	3	
Cumulative Sites In Operation		1	2	3	3	
Feas. Study Costs/Site	\$500,000					
Capital Requirements						
Site Manpower Costs	\$45	\$47	\$50	\$52	\$55	\$249
Supervisor Costs	30	32	33	35	36	166
Site Overhead Costs	15	16	17	17	18	83
H/Q Overhead Costs	20	21	22	23	24	111
Site Feas. Study Costs	500	105	110			715
Land Acquisition Cost	60	63	66			189
Construction Costs	40	42	44			126
Tot. Fixed Assets	100	105	110			315
Gross Capital Requirement	\$710	\$326	\$342	\$127	\$134	\$1,638
Less: Gross Profits (from Production)		46	96	151	159	451
NET CAPITAL REQUIREMENTS/(RETURNS)	\$710	\$280	\$246	(\$24)	(\$25)	\$1,187

Note 1: One Hectare size ponds have been chosen for this example.

If a commercial size were taken (10 Ha. per pond), costs would more than triple, but would be totally recovered through increased profits over five years.

REFORESTATION:

	(\$000's)	(\$000's)	(\$000's)	(\$000's)	(\$000's)	(\$000's)
	Year 1	Year 2	Year 3	Year 4	Year 5	Total
<u>Assumptions</u>						
# Sites established	2					
Employees per site	1					
Total Site Employees	2					
Site Feas. Studies Completed	0.4	0.4	0.4	0.4	0.4	
Feas. Study Costs/Site	\$500,000					
<u>Cash Outflows</u>						
Site Manpower Costs	\$90	\$95	\$99	\$104	\$109	\$497
Site Overhead Costs	30	32	33	35	36	166
Site Feas. Study Costs	200	210	221	232	243	1,105
Total - Reforestation	\$320	\$336	\$353	\$370	\$389	\$1,768

FOREST PRODUCTS

<u>Assumptions</u>						
# Sites	2					
# Professionals Per Site	1					
# Supervisors Per Site	1					
Site Professional's Salary	\$25,000					
Site Supervisory Salary	\$45,000					
Site Overhead Costs	33%					
Site Feas. Studies Cost	\$500,000					
Seed Capital/Site	\$500,000					
Site Feas. Studies Completed	1	1				
Seed Capital Required		1	1			
<u>Cash Outflows</u>						
Site Professional Costs	\$50	\$53	\$55	\$58	\$61	\$276
Site Supervisor Costs	90	95	99	104	109	497
Site Overhead Costs	47	49	51	54	57	258
Site Feas. Study Costs	500	525				1,025
Site Seed Capital Costs		525	551			1,076
Total - Forest Products	\$687	\$1,246	\$757	\$216	\$227	\$3,133

ECO-TOURISM

	(\$000's)	(\$000's)	(\$000's)	(\$000's)	(\$000's)	(\$000's)
	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Assumptions						
# Hotels/Lodges Established	3					
Managers Per Site	1					
Supervisors Per Site	1					
Total Site Managers	3					
Total Site Supervisors	3					
Employees At Head Office	1					
Salary for Site Managers	\$25,000					
Salary for Site Supervisor	\$45,000					
Site Feas. Studies Completed	1	1	1			
Hotel Needing Seed Capital		1				
Nat. Reserves: Seed Cap.		1	1			
Proj. Costs/Hotel (\$000's)	\$5,000					
Pr. Costs/Lodge (\$000's)	\$2,000					
% Debt Financed	60%					
% Equity Financed	40%					
Pct Equity For Seed (Note 1)	20%					
Feas. Study Costs/Site	\$500,000					
Cash Outflows						
Site Manager Costs	\$75	\$79	\$83	\$87	\$91	\$414
Site Supervisor Costs	135	142	149	156	164	746
Site Overhead Costs	70	74	77	81	85	387
Site Feas. Study Costs	500	525	551			1,576
Seed Capital - Hotels (Note 1)		1,050				1,050
Seed Cap. - Nature Res. (Note 1)		420	441			861
Total - Eco-Tourism	\$780	\$2,289	\$1,301	\$324	\$340	\$5,034

Note 1: Seed equity provided for projects would be matched with equity from the private sector.

