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PREFACE

During the past two years, the Bank has broadened its focus on the environmental front. Propelled by the mandate imparted by the Eighth Replenishment in 1994, we have integrated our environmental objectives more completely with those of the Bank's goals of combating poverty and supporting equitable social and economic development in Latin America and the Caribbean. Increasingly, Bank lending is concentrating on the priority areas of poverty reduction, human capital formation, rural poverty and sustainable agriculture, integrated natural resources management and the environment, urban development, economic and financial modernization and integration, and strengthening civil society and democratic institutions. Over the next three years, some $10 billion in projects have been identified that support the goals of sustainable development. This year's Annual Report of the Bank's Committee on Environment and Social Impact highlights some of the more significant steps we have taken in this direction during last year.

In 1996, the IDB and the Multilateral Investment Fund approved 12 environmental and natural resources loans for a total of $815 million, up from $796 million a year earlier. In addition, the Bank approved 50 technical cooperations for a total of $27 million reflecting an emphasis on policy formulation, management and the design of institutional and legal frameworks. Environmental projects covered sanitation and sewerage, potable water, wastewater treatment and flood control in urban areas and three major sustainable natural resources management projects totaling $129 million in Colombia, Nicaragua, and the Peten region of Guatemala. Special emphasis has been given to poverty and social equity which are targeted to receive 40% of the Bank's lending. In 1996, the Bank approved 40 operations in the social area totaling $2.7 billion.

As the composition of the Bank's lending shifted in response to the new mandates of the Eighth Replenishment, we found it necessary to design new approaches to ensure the environmental quality of Bank projects. For the past 15 years, the Bank's Environment Committee (CMA) reviewed IDB operations, classifying them for potential environmental impact and indicating measures to mitigate harm. In 1996, the CMA's scope was broadened to include the social impacts of IDB-financed projects, and its name was changed to the Committee on Environment and Social Impact (CESI). The new review process underscores the Bank's commitment to ensure that all future operations, not only address environmental issues and opportunities, but also take serious steps to assess, prevent, reduce and mitigate the adverse effects they might have on low-income people, women, indigenous communities, minorities and other vulnerable groups. The CESI provides a tool to address environmental and social issues at an early stage in the project preparation cycle, and thereby, offers an opportunity to shape the design and content of operations in order to enhance their social and environmental sustainability.

In tandem with a strengthened internal review, the Bank is identifying methodologies and strategies to guide the staff and borrowing countries in their efforts to address critical problems in environmental and natural resource management. Now we face the task of integrating the lessons of environmental assessment into our search for solutions to the critical problems of social equity and the reduction of poverty. To provide an orientation to future operations, the Environment Division of the Social Programs and Sustainable Development Department is preparing innovative strategies to be considered by the Bank's senior management and the Board of Executive Directors. The thrust of the new water resources management strategy, which is designed to help countries improve their ability to allocate and conserve water and reduce conflicts among uses, will be an integrated approach to problem solving, rather than the individual project procedure of the past. The strategy for coastal and

marine resources, which represents a new focus for Bank activities, also aims at developing integrated programs to meet economic, social and environmental needs. A new strategy for rural development will call for linking programs with measures to conserve natural resources and the elimination of a negative bias toward the rural sector. These strategies, which are built upon Bank experience, broad consultation and an analysis of state-of-the-art concepts, will be implemented through Bank lending activities, technical assistance and broad outreach and dissemination efforts as the Bank engages the regional actors in a dialogue on these topics. The recently established Sustainable Markets for Sustainable Energy Program embodies this effort to bring new ideas and practices to the region in the form of pilot projects for energy efficient technologies and practices and sources of clean energy.

Through its lending program, strategies, technical assistance programs and outreach efforts, the IDB and its member countries are exploring the complex issues related to sustainable development. Drawing forth lessons and ideas to guide our common action is clearly a dynamic process of learning, testing, applying and exchanging knowledge and is one of the central roles for a regional institution such as the IDB.

Waldemar W. Wirsig
Chairman, Committee on Environment
and Social Impact

I. THE IDB AND THE ENVIRONMENT

Under the terms of the Eighth Replenishment of 1994, the Bank was directed by its borrowing and nonborrowing members to target 40% of its total lending and 50% of the total number of operations to the social sectors. The new mandate also emphasized improved stewardship of the region's natural resources by improving the environmental quality of Bank operations, strengthening the institutional base for environmental management within the context of market economies, and promoting innovative solutions to urban environmental problems. The Eighth Replenishment also focused on modernization and integration through support for democratic institutions, improved public sector management, a larger role for the private sector, and strengthening civil society.

The Bank has translated its mandate into five priority areas of activity. Its government lending operations, private sector debt and equity funding, technical cooperations and grants, seek to promote sustainable development. The Bank's activities enhance human capital formation, seek to eradicate rural poverty and promote sustainable agriculture, advance integrated natural resources and environmental management, improve the nature of urban development, and address critical needs for economic and financial modernization. The Bank's fundamental objective is to enhance the quality of its operations in all these areas through improved project preparation, review and evaluation.

MANAGING ENVIRONMENTAL QUALITY

Since 1983, the Environment Committee (CMA) has reviewed the environmental quality of Bank operations. The CMA is a management level group that meets weekly to address environmental risks and opportunities in its operations and ensure that they comply with environmental policies and procedures. New procedures for the Environment Committee were approved during 1996, broadening the scope of review, streamlining operation, and changing the CMA's name to the Committee on Environment and Social Impact (CESI). The new procedures (Procedures of the Committee on Environment and Social Impact) were approved by the Bank's Loan Committee on November 21, 1996. They bring the substantive focus of the Committee's mandate into line with the policy directives of the Eighth Replenishment.

Structure of the CESI

The Committee on Environment and Social Impact, like its predecessor, is an interdepartmental body for reviewing and enhancing the quality of Bank operations. In the context of the processing of operations, the CESI functions as a technical subcommittee to the Bank's Loan Committee, which decides when operations may be submitted for consideration of the Board of Directors. The CESI is chaired by the Manager of the Department of Social Programs and Sustainable Development (SDS). Members include the Division Chiefs of the Environment and Natural Resource Divisions of Regional Operations Departments 1, 2 and 3; designated Division Chiefs from the Strategic Planning Department, the External Relations Department and the Legal Department; and the Chiefs of the Environment Division (SDS/ENV), and the Indigenous Peoples and Community Development (SDS/IND) and Women in Development Program (SDS/WID) units. In discharging its responsibilities, the CESI relies on technical inputs from other Bank units, especially the Environment Division of the Social Programs and Sustainable Development Department.

Under the terms of the new procedures, the Committee may delegate the review of operations to a Technical Review Group (TRG). Coordinated by SDS's Environment Division, the TRG is composed of one technical representative from each of the environment and natural resources divisions of the Bank's regional departments, and single representatives from SDS/ENV, SDS/IND

and SDS/WID. Members of the CESI are also at liberty to attend sessions of the TRG.

Scope and Objectives of the CESI

The new procedures consolidate what the Bank has learned regarding the use of environmental impact assessments as a tool to improve the quality of its operations, and the use of an internal interdepartmental and interdisciplinary review committee to enhance the quality of operations. Recognizing the effectiveness of these mechanisms in the environmental area, the new procedures extend this approach to the treatment of social impacts. This entails the consideration of social effects within more broadly defined environmental impact assessments, as well as the adoption of more systematic approaches to the treatment of social issues, such as impacts on women, indigenous peoples, and involuntary resettlement, on which the Bank has well-defined policies.

In this spirit, the new procedures define the scope of the CESI to include: (i) the promotion of adequate environmental and natural resources regulatory and management frameworks; (ii) the adoption of environmental protection, management, mitigation and enhancement measures; (iii) indigenous rights and community development issues; (iv) involuntary resettlement matters; (v) consultation requirements; (vi) gender considerations; and (vii) issues of social impact and sustainability, with due regard to the primary responsibility of operational units for design issues, such as poverty targeting and distributional consequences, among others.

Within this broad scope, the primary objective of the CESI is to enhance the quality of Bank operations, by:

- promoting cost-effective integration of environmental and social impact considerations into the design of the Bank's operational strategy, at the national and regional levels;

- minimizing negative environmental and social impacts and enhancing opportunities and options to promote positive effects in all phases of Bank operations;

- providing relevant information to enable Bank decisionmakers to effectively evaluate environmental quality and social impact factors in project analysis and approval, as described above; and

- overseeing that the Bank's analysis and decision-making processes regarding environmental and social impact are transparent and participatory. This entails ensuring the quality of relevant documentation, and promoting the dissemination of accurate and timely information to, and consultation with, local communities and groups affected by Bank-supported actions.

Emphasis on Strategic Management

The aim of the new procedures is the creation of opportunities that will permit a more comprehensive, holistic and strategic approach to environmental, natural resources and social issues. Along with broadening the scope of the CESI's project review, the procedures underscore the Committee's concern for the strategic context and content of Bank operations in a number of ways.

First, they reiterate the role that the CESI, like its predecessor, exercises in the review of Bank strategies in the area of environment and natural resources, the identification of critical issues that may need to be addressed in the future, and the assessment of Bank experiences with environment and natural resources management.

Second, the procedures provide incentives to encourage the Bank to prepare country environmental strategies. These are not intended to cover all issues or to replace national environmental action plans. They are intended only to identify the key environmental challenges that are relevant to the Bank's program in the country, either because they represent risks and obstacles or because they present opportunities for joint action. These strategies provide a framework for CESI discussion of operational issues in each country, and avoid repeated discussions of issues that may affect more than one operation.

Third, the primary focus of the CESI's review will be on the early stage of the project development cycle. In order to have a more explicit influence on the design and development of operations, the Committee will concentrate on reviewing and specifying the scope of the issues, alternatives and impact studies that Bank project teams should undertake (or have borrowers undertake) in project preparation. With this in mind, Bank project teams will be required to prepare an Environment and Social Impact Brief (ESIB) as part of the standard Profile II that defines the general characteristics of the operation, identifies the issues to be addressed in its design, and sets forth the studies that must be carried out to prepare the operation for appraisal. Based on the ESIB, the Profile II will contain explicit guidance and stipulations for the project preparation process that will be the object of the CESI's analysis and review. Based on this review, the CESI will make detailed recommendations regarding the type and scope of environmental and social impact studies that must be stipulated in the Profile II. By focusing on this early stage of the process, the CESI expects to provide more timely assistance to project teams in the identification of alternatives and the integration of environmental and social impact considerations in the design and appraisal of projects.

As in the past, the CESI will also review the Environment and Social Impact Report (ESIR) containing the specific actions and mitigation measures that the Bank proposes to require in the operation. The focus of the

Committee's review of the ESIR will be to ensure that the proposed operation addresses effectively the environmental and social impacts or opportunities identified in the preparation process.

One result of providing specific guidance at the early stage of the project cycle is that new procedures no longer require that projects be classified according to the degree of impact they might have on the environment. Categories were useful in the initial stages of the Bank's environmental management efforts, which focused primarily on mitigating the impact of traditional infrastructure development projects. Over time, categorization became inadequate to accommodate the nuances of the more sophisticated quality enhancement process that now occupies the CESI, and covers a growing number of cross-sectoral issues in an ever more diverse pipeline. The fundamental objective of the changes described above is to focus the scoping discussion on actions to be taken for substantive reasons and on the terms of reference of the impact assessment exercise. This strengthened upstream focus should provide opportunities to address impacts through prevention, better management and operation design, avoiding the need for, or lowering the costs of, impact mitigation or compensation.

Technical Review Group

The Technical Review Group established by the new procedures will review operations assigned to it by the CESI in order to save time in the discussion of operations with manageable impacts or those presenting highly similar environmental and/or social issues that can be addressed through standardized guidelines. It will also provide a more expert, flexible and direct means to resolve technical issues in collaboration with project teams. This division of labor with the TRG will enable the Committee to focus on policy issues, on strategies to improve the management of the environmental quality and social impact of Bank operations, and on follow-up and feedback of the actions that it recommends, to learn from their results and improve and simplify them. The lessons learned from this process should facilitate the review of operations, while creating opportunities to enhance the effectiveness of the management of environmental and other cross-sectoral matters within the Bank, through the ongoing refinement of policies, guidelines and strategies.

Simplification and Integration of Pr oject Documentation and Pr ocessing

Under the new procedures, the project documents themselves will contain an environmental chapter and/or annex approved by the CESI. This chapter will state the conclusions of the scoping and assessment exercises, and establish the requirements for preparation in the profile phase, and for execution and operation in the final approval phase. Eliminating the need to prepare separate documents will reduce the number of steps in the preparation process, and also will ensure that other decision-making committees and the public are fully informed regarding CESI decisions and the environmental aspects of each operation.

NEW POLICY DEVELOPMENTS

In 1996, the Bank also initiated the process of developing a policy on involuntary resettlement for consideration by the Board of Directors. The policy is intended to consolidate the Bank's practices with respect to involuntary resettlement and to provide a framework for the more systematic application of existing guidelines. Raising this issue at the policy level has also launched an internal and external dialogue on many aspects of resettlement activities that are difficult to resolve, such as the special challenges presented by urban development and improvement programs, and the relationship of resettlement programs to community development and poverty reduction initiatives, among others.

In this, as in all areas related to social issues and to the protection of vulnerable populations, the Committee will continue to promote the application of techniques which are flexible and allow for contextual considerations to be taken into account, and rely heavily on community consultation and participation to ensure that acceptable solutions are found and implemented.

QUALITY ENHANCEMENT ACTIVITIES OF THE CMA

In 1996, the Bank continued its practice of reviewing every operation for environmental quality. The CMA reviewed, classified and approved 224 operations. These included 99 investment and sector loans, 122 technical cooperations and three small projects. Of the technical cooperations and small projects, 22 were classified as having environmental implications that required further action by the CMA, generally entailing complementary training programs and inclusion of environmental concerns in the terms of reference for the studies being financed. Investment and sector loans included none in category I (positive impacts only), 27 in category II (neutral), 69 in category III (moderate impacts with known mitigatory options) and 3 in category IV (significant impact).

As in past years, several key projects highlight the benefits of project review. One of the most notable examples is the southern highway project in Belize, in which the review system opened the door to a serious regional planning effort that ultimately led the government, with the support of the project team, to conclude that certain regional planning and management efforts should pre-

cede the civil works portion of the project. The Bank plans to finance a project to support this government decision. Another example of the effectiveness of this process was the use of CMA/Loan Committee requirements to leverage the Bank's position in promoting an agreement between opposing interests with respect to the Panama City-Colon toll road. The result, in addition to community support and ownership of the project, was the adoption of an alternative route, coupled with mitigatory and compensatory measures that proved beneficial to all parties concerned. Greater evidence of the success of the quality enhancement process, however, is found in the mainstreaming of good practices, such as studies of alternatives, regulatory improvement efforts, early preparation of detailed environmental management plans and resettlement programs, and more effective consultation strategies. All these areas showed signs of improvement in 1996, creating the opportunity for a more encompassing and long-range approach to the challenge of achieving the best possible quality in development planning, design and execution.

TRUST FUNDS

Trust funds are an important source of additional financing for hiring consultants to carry out short- and medium-term assignments. Several trust funds established under the Bank's 1991 Program for the Development of Technical Cooperation among Member Countries (TC/FUNDS Program) include environment and natural resources under their sector concentration.

The Environmental Technical Cooperation Trust Fund from The Netherlands focuses exclusively on technical assistance for environmental activities. During 1996, The Netherlands and the Bank negotiated the replenishment of this trust. The funding was approved during the second half of the year for approximately two million dollars.

Other trust funds continued to use their resources to support the environment and natural resources sector. Operations approved in 1996 include $80,000 from the Canadian Trust Fund for the preparation of a study on management and ownership by indigenous peoples of natural resources on forested land. The purpose of the operation is to analyze the current legal, ecological and social situation, and to assess the future productivity of natural resources. The Canadian Trust Fund also approved $85,000 in financing for a survey of waterfowl and nearctic shorebirds in the Pantanal. Application of the information produced by this survey may include conservation planning for national parks and reserves, ecotourism, management of fisheries, and amelioration of the impact of industrial activities. The Israeli Consultant Trust Fund approved an operation for $28,000 to organize a National Geographic Information Systems Coordination Workshop in Bolivia to develop a national strategy for use of Geographic Information Systems (GIS) and related technologies, and to advance the practical use of GIS in Bolivia. Finally resources from the Italian Trust Fund were approved for $300,000 to carry out a study of the legal and institutional framework for environmental management in Argentina, Bolivia, Brazil, Chile, Paraguay and Uruguay (Region 1). The study analyzes the existing environmental regulatory and institutional framework of the six countries, and makes several recommendations to improve the effectiveness of environmental management (see Chapter III).

INDEPENDENT INVESTIGATION MECHANISM

In 1996, the Bank received the first request for an independent investigation under its Independent Investigation Mechanism procedures. This mechanism, approved in 1994, is designed to provide an additional safeguard to people who might be affected by Bank-supported operations. The request was submitted by a Paraguayan NGO with both the World Bank Inspection Panel and the IDB's Investigation Mechanism. It concerns the Yacyretá Hydroelectric Project, a 70-kilometer-long dam spanning the Paraná river where it forms the border between Argentina and Paraguay. This hydroelectric project was initiated in 1978 by the governments of Paraguay and Argentina and has been financed by the Argentine government and loans from the Bank, the World Bank and others. In early 1997, the Board of Executive Directors will consider whether a full independent investigation is warranted.

II. NEW STRATEGIES FOR ENVIRONMENTAL AND NATURAL RESOURCE MANAGEMENT

Underscoring the need for Latin America and the Caribbean "to move from a period of crisis and reform toward achieving growth that is financially, environmentally and socially sustainable," the Bank's Eighth Capital Replenishment (1994) explicitly sets forth a broad agenda for environmental action. The agenda emphasizes the overarching need to continue to provide strong guidance for improving the environmental quality of Bank operations. It also highlights the need to strengthen the institutional capacity of borrowers for environmental management within the context of free market economies, and to develop innovative solutions to urban environmental problems. Finally, it directs the Bank to address critical natural resource management issues surrounding tropical forests, water resources, soil degradation, coastal and marine resources, sustainable agriculture, deforestation, and energy efficiency and renewables. Throughout, the Eighth Replenishment also reiterates the importance of maintaining transparency in Bank operations, consulting with civil society, fostering environmental education, and consulting broadly and openly with NGOs and the public.

Consonant with the above, the Environment Division of the Social Programs and Sustainable Development Department prepared drafts of strategies for integrated water resources management and coastal and marine resources management that will be submitted for the consideration of Bank authorities in early 1997. Strategy work which will be completed in 1997 was also initiated in the areas of energy, sustainable rural development and sustainable agriculture.

Strategy implementation initiatives are also being developed, either in parallel with or subsequent to completion of each strategy. For example, in late 1996 the IDB and other donors (the European Commission, the United States Department of Energy and the United States Agency for International Development) provided $1.4 million in regional technical cooperation support for a pilot program to develop markets for sustainable energy in the region. The creation of a market for these activities will help remove barriers that in the past inhibited the Bank's involvement in this important area.

A PROPOSED STRATEGY FOR INTEGRATED WATER RESOURCES MANAGEMENT[1]

Water resource management is one of the most important issues affecting communities in Latin America and the Caribbean (LAC). Although the region is well endowed with fresh water resources, there are extreme variations in time and geographical availability, and some countries are highly dependent on transboundary waters. Water withdrawals also vary for different subsectors and are expected to increase by approximately 70% by the year 2025, when about 85% of the region's population will be urban. Three continental Latin American countries and many cities are already facing moderate water stress as measured by the annual volume of water per capita. Despite massive investments, 84 million people still had no access to clean drinking water in 1995, and approximately 165 million people lacked sewer service. Based on estimates of population growth and increased pollution, by 2022 all major cities and fourteen continental countries could face water stress. The small island states, with their high reliance on groundwater and the interaction between land and coastal resources, also face a number of unique challenges.

This trend is causing serious effects on the region's freshwater ecosystems. Extensive wetlands and native

[1] This section draws from the paper *A Proposed Strategy to Encourage and Facilitate Improved Water Resources Management in Latin America and the Caribbean* by William Lord and Morris Israel, as well as on papers and recommendations presented by consultants, Bank staff, and country and international organization representatives at a May 1996 regional workshop on the subject.

grasslands are being transformed with little consideration for long-term water needs. Shrimp farms have replaced once extensive mangrove forests and dams and the construction of channels potentially undermines important wetland resources.

In general, there is no adequate administrative structure in LAC to manage water resources in an integrated manner. Adding to that, recent trends in piecemeal decentralization, decisions made by isolated user groups or sectors, and privatization experiments in hydroelectric power generation, irrigation and water supply, have increased the fragmentation of the entities that administer subsectoral water resources, making it more difficult for them to adopt an integrated approach.

Traditionally, water agencies have focused on the development of water resources, which responds to supply and is concerned primarily with independently facilitating single purpose water uses (such as irrigation, municipal water supply or navigation). However, current practices are not sustainable from either economic or environmental perspectives. International lending organizations agree[2] on the need to promote and facilitate a shift from a sectoral approach in which projects and demands for uses (such as water supply, irrigation or hydropower generation) are considered in isolation, to an integrated water resources approach. This entails a shift from an emphasis on water resources development (supply oriented) to water resources management (supply and demand oriented).

However, the implementation of these elements must be adapted to suit the region's unique characteristics and needs. The Inter-American Development Bank started a process of review and analysis of water resources management problems and those strategic approaches that are best suited to resolve them in order to identify priority issues where the Bank's involvement could make important contributions.

Shortcomings in Water Resources Management

- Water resources management activities are diffused and fragmented and, more often than not, divorced from environmental management.
- Water resources management often is hindered by lack of enough adequately trained human resources at all levels.
- The delivery of water services typically is centralized in government institutions and agencies which are often overextended, underfunded, and ill-organized to provide quality services, resulting, for example, in deteriorated infrastructure and low efficiency.
- Traditionally, regulatory approaches have been favored over market and incentive-based approaches. Changes in management have occurred mostly through centralized government and without the participation of stakeholders.
- In many instances, water resources management legislation includes provisions which may no longer be relevant and may actually constrain new initiatives. A more significant concern is the general lack of rules and regulations for monitoring and enforcing existing legislation.
- Water resources management often is hindered by a lack of adequate and reliable hydrologic, meteorologic and water quality data, as well as information on the socioeconomic characteristics of water use.

The Proposed Strategy

A strategy for Bank involvement in integrated water resources management is currently being prepared. The proposed strategy incorporates some practices already being applied by the Bank and proposes new ones, providing a coherent set of guidelines and specific and concrete actions for Bank operational activities, conducive to the improvement of integrated water resources management.

The goal of the proposed strategy is to establish operational guidelines for the Bank's involvement in integrated water resources management in Latin America and the Caribbean, in support of more efficient ways to allocate and conserve water and better ways to solve conflicts among competing uses, including environmental uses. These guidelines aim at shifting from a subsectoral to an integrated approach and from an emphasis on development, to an emphasis on management, recognizing the social, economic and environmental value of water, with due participation of the communities and the private sector.

The proposed strategy aims to be flexible. It focuses on the levels of decision-making and supports institutional restructuring, when needed, for enabling a proper involvement and interaction between the actors (public sector, private enterprise and civil society) involved in this

[2] International Conference on Water and the Environment (Dublin, 1992); WMO/IDB Conference on Water Resources Assessment and Management Strategies in Latin America and the Caribbean (San Jose, Costa Rica, 1996).

process. The proposed strategy aims also to be adaptive and recognizes that different water use problems, as well as conservation of aquatic ecosystems, may be structurally different, each type requiring drastically different approaches. It seeks to be a problem-solving strategy that recognizes the substantial, if limited, leverage which the Bank can and should exert over water resources decision-making in Latin America and the Caribbean. In addition, it recognizes that the Bank needs to be sensitive to other goals and objectives that individual countries may have regarding water resources management, such as strengthening regional trade, reaching agreements on the use of transboundary water resources, strengthening subregional links among groups of countries or using natural advantages for subregional development.

Strategic Guidelines

The seven principles that comprise the general philosophy of the proposed strategy are discussed below. These principles serve as a guide for the development and implementation of Bank assistance programs in the water resources sector.

- *Develop Integrated National Strategies:* There is little hope for improved water resource management in LAC unless the countries possess national policy and legal environments which are conducive to effective water resource management.

- *Institutional Innovation and Capacity Building:* Priority must be given to institutional analysis and change. The capacity building process must be sustainable and thus, it needs to be systematic and continuous. Capacity building can be carried out through a number of existing specialized institutes in LAC, some of which have already begun to do this kind of work.

- *Long-Run and Short-Run Efforts:* Developing an institutional structure which will lead to improved water resources management is a long-run process of experimentation, adaptation, learning and improvement. Far-reaching changes in national or regional water policies and laws cannot be enacted in haste. Change requires a full analysis and informed debate by representatives of all major stakeholder groups. Nevertheless, there will be certain projects which are so obviously and quickly needed (community water supply or municipal wastewater treatment facilities for example), that no national strategy or river basin management plan will be required to confirm their desirability. Current knowledge concerning what constitutes good water resources management should play an increasing role in generating and evaluating proposals for such projects.

- *Internationally Accepted Integrated Water Resources Management Principles:* There is an emerging international and LAC consensus about certain principles (originating in the Dublin Principles), that should be taken into consideration in the formulation of water resources strategies. The proposed Bank strategy deals with the application of these principles to real situations in Latin America and the Caribbean.

- *New Kinds of Incentives:* Water resource management activities, such as water or biodiversity conservation, do not generate a future revenue stream. However, such measures may be easily justified on the basis of their prospective reductions in cost, primarily in the form of reduced need for capital investment to support increased water supply. The Bank will support the application of analytical procedures to measure the benefits and costs of noncapital projects such as demand management and conservation of ecosystems. These procedures would not only provide an estimate of the long-term value of such measures but could eventually become the basis for evaluating loan programs.

- *Incentives for Internal Bank Cooperation and Coordination of Individual Approaches:* The strategy being proposed is a Bank-wide operational strategy and, as such, would be endorsed by the Bank's operational and central departments.

- *Cooperation among International Donor Agencies:* Some cooperative efforts in support of large development projects have occurred in the past. A substantial expansion of cooperation and coordination is now appropriate in the area of capacity building. Internationally-shared water resources can be important elements in regional integration and development processes in some countries. In this regard, support provided by international lending agencies can be instrumental in establishing new treaties, facilitating the continued operation of existing agreements, and forging cooperation among the numerous public, private and nongovernmental entities that may be involved.

Strategic Measures for Integrated Water Resources Management

Much of the literature on water resources management advocates measures such as river basin management, decentralization, privatization, stakeholder participation, human capacity building, water markets and transfers, institutional reform and innovation, cost recovery and demand management to solve water use problems. Although there appears to be general agreement that certain measures, such as demand management and user participation, should be part of all water strategies, and

that decentralization is a reality with which these strategies must cope, opinions vary on the inclusion of others, including water markets and privatization. Most of these measures have not been fully utilized in LAC. Each measure is feasible in some situations and not feasible in others. Each is a promising solution to some problems, and is likely to be ineffective in solving others. And, each is really a general term, within which considerable variation may occur. The potential success or benefits of these measures should be evaluated relative to existing conditions in Latin America and the possible long-term impact they could have on water resources management.

The process of choosing the appropriate measure(s) to implement in each situation should proceed from an assessment of local political, legal, institutional, technical, economic and financial conditions, and how these conditions match the requirements of the instrument under consideration. This is true whether the problems in question occur at the water use level or at one of the higher levels of water resources management and water policy and law.

Instruments for Implementing the Proposed Bank Strategy

The Bank has numerous instruments at its disposal, such as technical cooperations and loans, with which it can assist countries in improving integrated water resources management. The proposed strategy includes a roadmap for the use of these instruments in promoting integrated water resources management that could be applicable throughout the region.

Bank Instruments

- Country dialogue
- Country and regional technical cooperations and funds
- Project specific loans
- Sector and hybrid loans
- Specific lines of credit
- Small project loans
- Private sector loans
- Committee for Environment and Social Impact

A PROPOSED STRATEGY FOR COASTAL ZONE AND MARINE RESOURCES MANAGEMENT

Latin America and the Caribbean are endowed with a unique and valuable maritime heritage. Several of the world's largest and most productive estuaries occur in the region, such as those found at the mouth of the Amazon and the Rio de la Plata in the Atlantic or the Gulf of Guayaquil and the Gulf of Fonseca in the Pacific. The reef system lying off Belize is the second largest barrier reef in the world. The waters off Peru and Chile support one of the world's five largest commercial fisheries. The region's industrial ports are the second leading destination for containerized U.S. exports, and the Panama canal is a major focus of seaborne trade, providing a vital link between Pacific Rim countries, the western hemisphere and Europe.

Many of these assets have been undervalued in the past. Increasingly however, the contribution of coastal and marine areas to sustainable development is gaining recognition among coastal states and the public at large. The region's coastal zone represents a vast territory. In total, it stretches for 64,000 km and encompasses an area of 16 million km^2. For many countries, such as Panama, Costa Rica and the island nations of the Caribbean, this territory represents more than 50% of the total area under national jurisdiction. Marine fisheries exports continue to be a major source of foreign exchange earnings, with gross revenues estimated at $4.5 billion in 1993 but over 40% of the commercially exploitable stocks either fully fished, overfished or depleted. While the importance of mariculture in Latin America is relatively small, the region accounted for 21.6% of world farm shrimp production in 1995. Tourism accounts, on average, for about 12% of GDP in Latin America and the Caribbean and coastal areas historically have served as the region's main tourist destinations. The region offers several mature destinations such as the beaches of Cancun, the Dominican Republic, the Bahamas, Barbados, Punta del Este and Mexico's Pacific coast resorts. There are also more recent coastal facilities aimed at the booming ecotourism market such as the offshore keys of Belize, the Bay Islands of Honduras, the north east coast of Brazil, the coastal national parks of Costa Rica and the Galapagos Islands of Ecuador. Coastal communities in both rural and urban settings are expanding in response to growth in tourism and aquaculture as well as urbanization and intensification of transportation networks along coastal corridors.

In 1996, work was undertaken in preparation for a new Bank strategy for coastal and marine resources management. Several background studies were completed including:

- subregional assessments of emerging policy reforms for coastal management;
- sectoral reviews (in marine fisheries and tourism); and
- lessons learned from coastal management projects.

The strategy, expected for release in 1997, proposes new directions for Bank activities which significantly affect the sustainable development of coastal and marine areas in Latin America and the Caribbean. Calling for a renewed, more integrated approach, the strategy is intended to

bring the Bank's interventions in sectors such as marine fisheries, tourism and maritime transport, in line with the fundamental objectives of the Eighth Capital Replenishment. The principles, elements of innovation and actions at the core of the strategy are designed to fill a void in the Bank's current natural resources management policies.

The Bank's experience in coastal-related operations clearly points to some necessary changes in the way these projects are identified, designed and monitored to take into account the special character of coastal and marine areas. Marine fisheries operations underscore the urgency of moving from open access regimes to management schemes that restrict access, maximize rents and integrate environmental considerations. The Bank's experience in financing tourism loans has shown that the indirect land use changes associated with large public sector investments in the coastal zone call for more attention to land use planning and zoning at the outset as a means of avoiding conflicts as well as unwanted cumulative effects. The integrated coastal management projects have underscored the need to tailor the scope and objectives of more innovative projects to the existing institutional capacity and human resources of each coastal country.

Within the last five years, a few countries have started closing the gap between their policies for land and maritime resources. This is particularly true of countries whose economies are closely linked to environmental quality in the coastal zone, such as the following:

- Barbados and its Coastal Conservation Program,
- Ecuador with its Coastal Resources Management Program,
- Belize's Coastal Zone Management initiative,
- Brazil's National Coastal Management Program, and
- Costa Rica's Coastal and Marine Program.

The programs in Barbados, Costa Rica and Ecuador have received financing from the IDB. Based on the early results of these programs as well as the numerous small projects scattered throughout the region, a commitment towards sustainable development of coastal and marine resources appears to be emerging. Various regional meetings have recognized the need to accelerate action and to form new partnerships with national and local resource management agencies, the private sector, nongovernment organizations, and the marine science community to meet the challenge of integrated coastal management (see the Eighth Coral Reef Congress in Panama described in Chapter III). This heightened awareness, which is also reaching the general public, is expected to boost considerably the demand for financial and technical assistance in coastal and marine resources management in Latin America and the Caribbean over the next decade.

One of the strategy's objectives is to assist the region in establishing programs for the integrated management of coastal and marine areas tailored to the social and economic priorities of coastal states. In doing so, the intent is to promote regional and national leadership in coastal management through the meaningful participation of stakeholders, to create opportunities for innovation and adaptive learning in problem-solving, to link coastal management to other areas of reform for sustainable development including water resources management, and to foster a genuine commitment toward a more integrated and precautionary approach to coastal and marine resource use.

To meet this objective, five elements of innovation are recommended as the core of the Bank's strategy. These changes are considered fundamental for guiding Bank activities which affect the sustainable development of coastal and marine areas in Latin America and the Caribbean. They are the following:

- *Coastal Management as an Integrating Framework for Investment and Resource Allocation.* The concepts and practice of integrated coastal management can reinforce the linkages between coastal-dependent sectors and sustainable development. As a first priority, integrated coastal management will be used as a framework to enhance the sustainability of Bank-financed operations in marine fisheries management, aquaculture, port development and rehabilitation, and coastal tourism. With experience, coastal management tools will also be used to enhance the design and execution of Bank-financed operations in all infrastructure investments in the coastal zone defined broadly as encompassing the land-sea interface, adjacent terrestrial systems that affect the sea and the Exclusive Economic Zone (EEZ). This will be a gradual effort aimed at acquiring an increasingly more integrated view of development, land and resources in the coastal zone.

- *New Paradigms for Investing in Living Marine Resources.* The Bank's strategy for coastal and marine

Linking Coastal and Watershed Management

Watershed management tools come into play in reducing indirect and cumulative impacts in the coastal zone, particularly in the following circumstances:

- small island ecosystems with fringing reefs and mangroves;
- major estuarine ecosystems affected by water diversion and irrigation projects;
- semi-enclosed bays and lagoons;
- low-lying poorly drained coasts affected by erosion and flooding.

resources management recognizes that the fundamental issue in marine capture fisheries is one of moving from open to closed access regimes. Associated issues are the need for making decisions on the distribution of wealth; the formulation and implementation of appropriate management measures; the transfer of primary management responsibility to fishermen groups; and enforcement of closed access regimes. Through its operations directly aimed at the marine fisheries sector, the Bank will provide incentives for a shift in policy from development to management. It will also explore incentives for preventing the damaging effects of poorly planned mariculture on the coastal zone. As well, the Bank will work with its member countries toward a convergence of environmental considerations and fisheries management with the specific aim of protecting coastal and marine ecosystems and marine biodiversity.

- *Reducing Indirect and Cumulative Impacts in the Coastal Zone.* Coastal and marine areas invariably serve as the receiving waters for all types of upstream effluents, including sedimentation from deforestation, freshwater inflow changes and other disruptions in hydrological regimes. Recognizing that environmental assessments have been more effective in mitigating direct effects of projects rather than their indirect effects, the Bank will refinement methodologies to allow adequate consideration of indirect environmental costs on priority coastal ecosystems and resources — i.e., those ecosystems and resources for which restoration can only be a last resort. Methods will be developed for understanding cumulative effects (both additive and interactive) which tend to be most severe in coastal zones. Given that shoreline areas are highly dynamic systems that respond to coastal processes which cannot entirely be predicted or controlled, the Bank will encourage use of nonstructural measures for shoreline stabilization over structural solutions. In aiming to reduce the indirect and cumulative impacts of infrastructure and upstream water use on coastal and marine ecosystems, the Bank will promote the application of watershed management measures linked with coastal management objectives.

- *Processes for Avoiding and Resolving Conflicts in the Coastal Zone.* Coastal management often involves processes of mediation and dispute resolution between sectors, for example, or between private shorefront property interests and public activities in tidelands and coastal waters. Disputes may also involve marine resources which are shared between two countries. Coastal management offers tools and techniques aimed specifically at avoiding or resolving conflict through a balanced set of objectives for allocation of land, ocean space or resources. Recognizing that resource use conflicts in the coastal zone are an important obstacle to sustainable development, the Bank will explore with its member countries the application of consensus building and dispute resolution processes along with land use zoning restrictions, closed access regimes and other resource allocation tools for achieving multiple use of coastal areas.

- *Coastal and Ocean Governance.* Policies, regulatory instruments and institutions aimed at the management of coastal and marine areas lag behind other aspects of natural resources management. In many instances, this lag reflects a lack of awareness of the region's coastal and marine heritage and its contribution to national economic welfare. As in all other parts of the developing world, there is a generalized, fundamental need to introduce the economic value and issues relating to coastal and marine resources to government agencies, the private sector, and nongovernmental organizations throughout Latin America and the Caribbean. The Bank recognizes its unique position to work with its member countries to foster commitment to the management of the region's coastal and marine areas, and to develop the national and regional arrangements for effective governance of these areas. Broad-ranging education and outreach will be needed to develop informed constituencies for coastal management.

By implementing the strategy, the Bank intends to gradually internalize the principles of integrated coastal management in its decisions concerning investments in coastal and marine areas. This will mean gaining an institution-wide awareness of where investment decisions can affect the sustainable development of coastal areas. It means incorporating coastal management policy and practice at all stages of the project cycle, from programming, to project analysis, monitoring and evaluation. The strategy and the consultation process contemplated for 1997 offer a vehicle for discussing policy issues related to coastal and marine resources management with the Bank's member countries and other stakeholders such as international and regional organizations and NGOs. Following this consultation, the dissemination and outreach process planned for the upcoming years will lead to consensus on how the Bank can most effectively continue to support coastal management initiatives in the region.

Priorities for Sustainable Fisheries Research

- Basic economic and social data
- Resource valuation
- Means for extracting economic rents
- Community-based fisheries management
- Marketing analyses
- Trade and the sustainability of production

MARKETS FOR SUSTAINABLE ENERGY

In October 1996, the Bank approved a $940,000 non-reimbursable technical cooperation to develop and test a strategy for establishing markets for energy efficiency and clean energy sources. This $1.4 million two-year operation is also being financed by the European Commission, the U.S. Department of Energy, and the U.S. Agency for International Development. Further donor contributions and the Bank's managed preinvestment trust funds are expected to provide an additional two or three million dollars to help finance implementation of the action plans.

The program's objective is the development of markets for sustainable energy (energy efficient systems, technologies and practices, and clean energy sources). This means "mainstreaming" sustainable energy via new and innovative delivery mechanisms appropriate to restructured and competitive energy markets. The establishment of these markets might create a demand for credit that the local financing systems are unable to meet. Support from the Bank and other multinational institutions can meet this initial demand until local financing systems are able to do so.

In order to create appropriate conditions for future investment and ensure its success, the program is taking a process approach, as opposed to a project view. Examples of pilot projects that illustrate the concept include:

- a business supplying energy systems to rural energy services franchises,
- a business aggregating projects developed by total energy service companies,
- a clean urban transportation service company,
- a regional Internet wholesale supply business for sustainable energy products,
- international cooperative procurement, and
- loans for infrastructure incorporating least-cost energy bid components.

The program will initially assist three to four countries to identify, develop and implement promising sustainable energy projects (i.e. projects combining energy efficiency or clean energy technologies with innovative delivery mechanisms). The program will eventually be extended to all countries. Specifically, the program will provide assistance for the creation of action plans to foster sustainable energy development and establish the market feasibility of innovative pilot projects (including the selection of adequate delivery mechanisms and identification and removal of barriers to the successful implementation of the pilot project). The program will also provide assistance in obtaining financing for the most promising pilot projects, leading eventually to financing and implementation of successful full-scale sustainable energy projects.

III. HIGHLIGHTS FROM THE REGION REGIONAL ISSUES AND CHALLENGES

A great deal of work is involved in developing a better understanding of the environmental problems and priorities of Bank borrowers. While these efforts are not immediately obvious in investment project lending totals, they are a necessary ingredient in developing the programs and projects that make those totals effective. This year, for the first time, this report gives a glimpse of what is involved by summarizing three salient efforts. The first is a review of the state of environmental and natural resource legislation, regulation and institutional capacity in Region 1 countries (Argentina, Bolivia, Brazil, Chile, Paraguay and Uruguay). The second reports on the results of a conference to discuss the reform and modernization of water supply and sewerage systems in Region 2 countries (Mexico, Central America, Haiti and the Dominican Republic). The third is the environmental country strategy developed for Peru to guide the Bank's medium-term support.

REGIONAL ISSUES AND CHALLENGE

Laws and Institutions in the Southern Cone

The laws and institutions that govern environmental management in South America are rapidly changing. The environment has become an important issue at all levels of government, business and society, both nationally and internationally. This concern is mirrored in the new legislations and regulations that are being debated, proposed and implemented throughout the region.

Several major trends are currently influencing environmental management both directly and indirectly. Some of these are broad and affect the whole country, such as decentralization, the globalization of economies, reductions in public spending, and the privatization process. Others are more specific to the environment. They include, for instance, new management concepts (such as river basin management); an increasing use of incentive-based and proactive approaches to pollution monitoring and control; increased involvement of the private sector, universities and NGOs in management; and new legislation allowing an increase in private enforcement efforts. Against this backdrop, governments in the region are beginning to introduce new legislation into existing legal frameworks and incorporate environmental concerns into their multiple institutions.

The Bank recently completed a study of environmental management in Argentina, Bolivia, Brazil, Chile, Paraguay and Uruguay. The major areas of study encompassed in the report are summarized below. A comparative analysis of similar issues provided the basis for producing and ranking recommended actions in enforcement, budgeting and planning.

Legislation. There are three major components in environmental management: planning, legislation and administration. In the countries studied, the major recent advances have occurred in the area of legislation. Several new environmental laws have recently been adopted in the six countries, but problems resulting from overlapping jurisdictions (due to concurrent decentralization) and conflicts with existing laws persist. The situation is complicated by the adoption of new standards and regulations from international treaties and conventions which are too advanced for local economic and management systems. There is an urgent need to correct the shortcomings and contradictions of the legislation. This is a priority for all the countries, as they are adopting new legislation to control air and water pollution and the disposal of hazardous wastes. Legislation also needs to be specifically targeted to industrial cleanup, "greening" the productive sector and designing regulations that can accommodate the privatization process.

Institutions. The institutional framework for addressing environmental issues is extremely varied in level, number

and functions of the public agencies involved in environmental protection. Although Ministries of the Environment have been established in Brazil, Bolivia and Uruguay, they do not necessarily improve institutional coordination and can increase bureaucratic inefficiency. In every country studied, irrespective of the existence of specific ministries, enforcement of legislation is hindered by overlapping jurisdictions, a lack of interinstitutional cooperation and the general constraints inherent in administrative processes. Agencies often act separately, with insufficient coordination, and compete for scarce resources. Although in the federalist countries (Argentina and Brazil), the federal level adopts general and minimal rules, while the state or provincial level adopts specific and more stringent rules, the two levels of authority need appropriate legislation in order for the system to function properly. So far, this has not been the case. The legal distribution of jurisdictions is also a problem in the unitary countries (Bolivia, Chile, Paraguay and Uruguay), especially where the process of decentralization has begun. Although this process promotes political and administrative democratization and is an instrument for promoting local knowledge and skills, it is constrained by the lack of financial resources and technical capabilities at decentralized levels.

Planning. Comprehensive planning is one of the most neglected areas of environmental management. None of the countries studied has an institution for environmental planning at the national level, nor do they produce periodic reports on the environment. Most planning is generally carried out at the lower administrative levels or within various sectors or institutions where environmental issues are incorporated into existing plans. In addition, there is a general lack of interinstitutional, interjurisdictional and intersectoral coordination that inhibits comprehensive planning for sustainable development.

Nevertheless, some progress is being made in this area. For example, Bolivia is defining priorities in its National Environmental Action Plan, and Chile published a national Environmental Profile in 1994. Each country will need to develop a set of clear criteria for environmental quality that includes attainable goals and clearly defined responsibilities, as well as time lines for reaching those goals. In addition, the countries need an environmental information system on which to base their national planning priorities and update their objectives on an annual basis.

Monitoring and Control. Monitoring and control are essential to environmental planning and enforcement, and an integral part of any management program. However, several constraints impede their effective implementation, such as reactive legislative approaches and "command and control" laws, an inadequate set of standards that generally do not fit local conditions and overlapping responsibilities among regulating agencies. There are signs, however, of a shift toward more effective systems. Given the proper technology, these systems rely on requiring the generators of pollution and other environmental harm to undertake self-monitoring and reporting, on an increasing use of minimum environmental standards and on private environmental services.

Enforcement. Lack of enforcement is one of the major obstacles to improving the effectiveness of environmental management in the region. It relies on the capacity of local authorities to monitor and control violators despite the fact that most local administrations are too poorly equipped and too economically weak to perform these duties. Most of the countries have advanced legislation and procedures for enforcement but these do not correspond to the institutional capacity to carry them out. In addition, certain economic sectors (mainly mining and forestry) continue to lobby forcefully to maintain established benefits.

An encouraging development, however, is the increased participation of private and public institutions in bringing legal actions against polluters and other violators of the law. Constitutional provisions in Argentina, Brazil, Uruguay and Paraguay allow citizens to sue both polluters and administrators who do not carry out their legal duties to protect the environment. Brazil has a unique institution, the Public Ministry, whose attorneys generally become the principal plaintiff in environmental lawsuits. Furthermore, laws giving "legal standing" to individuals have allowed more citizens to legally claim their rights to a healthy environment through judiciary procedures. Although these suits can contribute to enforcement efforts, they are still not common enough to have a major impact on most violators.

Public Participation. A positive development in the environmental arena is the increased participation of the public and the new roles played by citizens, stakeholders and NGOs in environmental management. New legislation has allowed citizens to defend their right to a healthy environment and to participate in public hearings on environmental impact assessments. Previously excluded segments of society (such as indigenous people and the poor) that are often the most affected by pollution and other forms of environmental degradation are now participating more in the decision-making and accountability processes.

Funding Environmental Protection. In general, there is a chronic lack of adequate financing for environmental activities. Most countries do not have a line item in their national budgets for spending on environmental concerns. The funds that are available usually filter through

various ministries or secretariats. Fiscal constraints have precipitated a reduction in personnel and operating budgets at all levels of public administration and few new funds are allocated to the environment. Nevertheless, Bolivia, Brazil and Chile have national environmental funds financed by international agencies or a combination of taxes, fees and fines. Similarly, Argentina and Uruguay made use of debt-for-nature swaps through the Fund for the Americas. Numerous public and private projects receive funding from international donors and lenders, and many of the advances in environmental protection have been a result of such aid. In addition, lenders have recently begun to include environmental components in their loans.

The Decision-Making Process. All the countries studied have some form of legislation for reviewing environmental impact assessments (EIAs) and for granting permits to build or operate a business. In addition, most countries also have public hearings for EIA review and input. Although, in theory, the hearings should be an effective mechanism for public participation, there are constraints to effective public participation in the decision-making process. For example, most people face obstacles such as institutional resistance, scarce resources, and insufficient information presented in a timely manner to ensure their full involvement.

In an effort to speed up the EIA approval process, Bolivia and Chile have instituted administrative time limits for responding to project requests. Because local administrations are often unable to respond within the mandated time limits, this has led to instances in which projects proceed without an approved EIA. The limits have also reduced public participation in decision-making since there is not enough time to get the relevant information to local citizens and convene a public hearing on the issue.

Market-Based Instruments (MBIs). The use of MBIs varies widely among the six countries studied. The instruments used are generally fees, taxes and incentives, with a few cases of tradeable permits in Chile. The fees and charges usually apply to hazardous waste treatment and disposal, or to emissions. Incentives range from tax and fee reductions or exemptions, to subsidized credit schemes.

However, funds collected from MBIs on behalf of the environment generally go into the public treasury and not into environmental projects. MBIs also face several constraints, including a lack of institutional capability to implement them, economic and political resistance, and weak technical and legal frameworks.

The Role of the Private Sector. Several technical services and activities, such as monitoring, project review, EIA studies, and laboratory analysis, are best performed by universities or the private sector. Increasing private participation will help improve the effectiveness of environmental management. International certification under the ISO 14000 series and other equivalent standards have encouraged export-oriented companies to reduce their impact on the environment by decreasing their use of water, electricity and raw materials, and increasing recycling efforts. In addition, the private sector is now beginning to reduce pollution by adopting a "reduction at the source" approach rather than the traditional "end of the pipe cleanup" method. These efforts could be enhanced by a greater use of environmental audits, ecolabeling, and credit schemes with environmental conditionalities.

The Role of Donors and Lenders. International donors and lenders have played, and are still playing, an important role in developing and strengthening the legislative and institutional framework of the countries in the region. However, overly centralized bureaucracies, weak enforcement measures, jurisdictional disputes, institutional rivalries and other internal problems generally inhibit the best intentions of aid. In addition, in those countries initiating decentralization and/or privatization, the number of agencies needing support will multiply beyond the capability of international aid agencies and lenders to reach them.

Given this scenario, there is a need for a major shift toward a proactive approach to environmental management. This approach should be based on an increased participation of the private sector, development of market-based instruments appropriate to the recipient countries, and proven cost-effective management and enforcement practices. Support for international and regional conferences, training, and information sharing can help to identify and promote those practices that show promising environmental management results.

Globalization of the Economy and International Tr ade Agreements. The globalization of the world economy is reflected in the increasing attention given to international trade agreements and external investments. As trade agreements call for the reduction or elimination of tariff barriers, more countries are relying on nontariff barriers to trade. The result is an increasing trend towards establishing common standards of protection, in a process often described as "harmonization." This process includes environmental legislative frameworks in the countries that adhere to the MERCOSUR and NAFTA trade agreements.[1]

Three major areas of constraints have been identified

[1]MERCOSUR is a common market that includes Argentina, Brazil, Paraguay and Uruguay. Free trade agreements have also been established with Bolivia and Chile. The North American Free Trade Agreement (NAFTA) includes Canada, Mexico and the United States.

that are common, to one degree or another, in the countries of Region 1.

Weak Enforcement of Environmental Laws and Standar ds. Although many good laws are being enacted to protect the environment in the Southern Cone, the lack of enforcement has been a major impediment to truly effective environmental management. To improve enforcement, initiatives in training for environmental agencies, new standard-setting procedures, and increased public participation are required. In addition, environmental impact assessment procedures can be simplified to reduce the administrative burden and increase efficiency. Coordination among institutions charged with enforcing environmental standards can be improved by introducing, if necessary, the concept of "lead agency." Finally, there are opportunities to engage the media, NGOs and other segments of society to deter environmental violations. As an immediate step, these issues might form the basis for a regional conference to share experiences and lessons learned in environmental enforcement in the six countries studied.

Stringent Financial Constraints at All Levels of Envir onmental Management. Lack of financial resources has made implementing mandated activities and programs more difficult. A rational approach to these cutbacks would be to choose the most effective and efficient means of avoidance, minimization, or mitigation of environmental costs. One way to lower costs might be through contracting environmental services to the private sector ("outsourcing"), or adopting market-based instruments, where appropriate. Another possibility, given the proper enforcement mechanisms, is self-monitoring and auditing. Finally, earmarking funds generated by environmental agencies (from fines, permit fees, etc.) to remain in their budgets rather than go to the national treasury could ease financial constraints and improve regulatory efficiency.

Planning. With limited funding and increasing responsibilities, the need for long-range strategic environmental planning has never been more acute. Several recent developments can facilitate this planning process. The newly formed trading alliance, MERCOSUR, offers the possibility of "harmonizing" environmental standards and regulations across member countries. With adequate investment in environmental information systems and new approaches toward resource management (such as introducing river basin or coastline authorities), the tools to monitor environmental indicators are improving. Vital inputs to long-range planning include: drafting and implementing national and local environmental plans with realistic environmental quality goals, establishing a well-defined set of limited priorities, and setting a reasonable time schedule for achieving those goals. In addition, this information can also be used to develop periodic reports on the state of the environment. Privatization poses other challenges for environmental management that require careful planning prior to execution. Finally, to ensure an increasing demand for improved environmental standards and services, formal and informal education at all levels will continue to be a priority for the region.

Reform and Modernization of Water Supply and Sewerage Systems in Region 2

The Bank's Region 2 encompasses Mexico, the countries of Central America, Haiti, and the Dominican Republic. Without exception, the governments of these countries have expressed deep concerns about water issues. Water problems, ranging from water supply and availability to water quality, are becoming a key constraint to the region's development. Thus far, water sector studies point to inefficient institutional structures for water resources management as the main cause of these problems.

Potable water supply and sanitation are at the core of any discussion of water issues in the region, particularly because of the predominant role of public agencies in the production and distribution of water. Despite significant investments during the past thirty years, the institutional structure in place has not been able to provide the desired potable water and sanitation coverage. Data show that the quality and quantity of basic services is deficient in every country. Moreover, given the extremely low levels of wastewater treatment the sanitation sector itself is a significant source of water pollution. In addition, because the price of water does not reflect its economic value, there is evidence of depletion and overexploitation of key sources of surface and ground water.

Practically every Region 2 country has requested Bank assistance in reforming the potable water and sanitation sector. In response, the Bank and the Panamerican Health Organization organized a regional conference on reform and modernization of water supply and sewerage systems. The conference was held in San Pedro Sula, Honduras, from September 29th to October 1st, and included the participation of ministers, and other high-ranking government officials in the water sector as well as international experts and public and private sector representatives.

The objectives of the conference were to initiate a broad dialogue on sectoral issues, to open lines of communication among policymakers from different countries and to share experiences. For the Bank, the conference was an important first step in identifying a proper and balanced role for its support to institutional changes in the sector. It was not the intent of the conference, however, to arrive at prescribed solutions or definite conclusions.

Country representatives presented detailed reports of water supply and sewerage systems (organization, regulatory framework, tariff structure, subsidies, private sector

participation) and described investment plans and goals for urban and rural areas for the next eight years. Strategies for the development and implementation of sector reform and modernization were also presented. It became apparent that while the underlying problems and the potential solutions are similar, the nature of the changes will have to be tailored to the social, geographic and political conditions in each country.

The conference's plenary sessions focused on three important themes: the conceptual framework for reform, the lessons learned in the provision of water and sanitation services in urban centers, and the problems of water supply and sanitation in rural areas. The conceptual framework for sector reform shows a growing tendency to depart from centralized water institutions to decentralized management, and allow for greater private sector participation. This process has been initiated in several countries. A key element in the reform process is the definition of new institutional roles that separate normative from operational functions. However, it is not enough to define a new institutional structure. A medium- to long-term action plan to consolidate reforms and monitor performance must also be established. In defining a reform strategy, policymakers need to have a clear understanding of the concept and the motives behind reform, as well as the sequence of steps required to achieve it.

In order to design an optimal institutional structure, the following basic criteria need to be considered: operational efficiency; commercial and management efficiency; environmental quality; private sector participation, regulatory and control mechanism; and social welfare. Reorganization of the water sector has important environmental implications, because it allows the introduction of environmental quality norms into the regulatory framework, whereby the regulatory authority could have an autonomous role and a broader view and mandate over the water sector as a whole.

Because of the disparities between urban and rural areas, discussions during the conference helped to identify important points and lessons learned from successful experiences elsewhere. It was noted, for instance, that a model of organization and administration of sewerage services that promotes the creation of municipal consortia and associations within a watershed can be an important instrument to address problems that municipalities cannot resolve in isolation due to budget restrictions and staff shortages. The importance of promoting community participation in the design, construction and management of rural water services was emphasized. Some experiences show that a demand-based approach, whereby the communities select the level of services they are willing to pay for and manage, is an effective tool for guaranteeing sustainable water and sanitation services in rural communities.

An Environmental Strategy for Peru

Peru is a country rich in natural resources and biological diversity. However, the country's inadequate normative framework and weak institutions together with pressures resulting from economic reform, increasing population and poverty could threaten these resources. The objective of the Bank's environmental strategy for Peru is to support the development of policy instruments, institutions and programs that will increase the efficiency and flexibility of natural resources and environmental protection.

The economic policies of the past, characterized by excessive state intervention, weak property rights, subsidies and other price distortions, contributed to environmental degradation in several ways. These policies limited development possibilities and discriminated against the rural sector, contributing to higher levels of poverty among certain population groups, especially those living in the Sierra. Slope degradation and soil erosion from excessive use caused migration to urban areas and to fragile rain forest and cloud forest ecosystems, aggravating environmental problems in these areas. State institutions responsible for applying and enforcing environmental laws and regulations lacked the wherewithal to perform these functions. The lack of information and knowledge about nature and the use of sustainable technologies, particularly in agriculture and forestry (but also in industries, fisheries, and small- and medium-scale mining) has contributed to the inefficient use of natural resources and environmental degradation. Public resources financed transfers and subsidies to reduce poverty while the relationships between poverty and environmental deterioration went unrecognized. Political reform and institutional consolidation was put on hold, and investment in environment and natural resources research, education and information was limited.

Environmental degradation resulted from market, institutional and policy failures, and the scarcity of appropriate information and technology. To address these problems, the Bank has developed a strategy based on:

- The design of policies and related instruments that contribute to the development of efficient markets and promote behavior compatible with the sustainable use of natural resources and environmental conservation.

- The development of the State's normative capacity as it relates to environmental matters in order to ensure that it can intervene effectively in cases where market failure prevents the efficient allocation of resources. At the same time, the strategy will support the country's ability to develop sustainable technologies and disseminate information. In addition, adequate incentives should be put in place to encourage the adoption of technology by the private sector.

- The design of strategies and decentralized instruments to strengthen regional and local community participation in the management of natural resources and the environment.

- A program of poverty reduction targeted especially to the Sierra region.

Since financial resources are limited, the strategy should concentrate on the environmental problems that affect productivity and the welfare of the population, including water scarcity, soil erosion, air and noise pollution, and access to renewable natural resources. Water scarcity, which is severe in some regions, and poor water quality, especially in Lima and where fishing and mining are prominent activities, are serious problems. Agricultural activities consume the most water, and mining activities are the major source of water pollution. Soil erosion constrains productive activities thus reducing income and the supply of food, particularly for people living in the Sierra. The loss of productive farmland through erosion is also a major cause of rural migration to cities and to the fragile jungle frontier. Air and noise pollution, and solid waste disposal are important problems in the main urban areas. Technical obsolescence and a lack of environmental awareness contribute to these problems. Unlimited access to renewable natural resources, like marine biomass and forests, has resulted in their overexploitation. Both resources are very important for the country's economic growth and sustainable development, but rules and regulations are deficient and the State has trouble enforcing them.

The objective of the strategy is to achieve compatibility between growth, increased private investment, the management of natural resources, and environmental protection. To achieve these objectives, the strategy has three main areas of action: legal reform, institutional reform, and program development. The Bank will support, on a priority basis, government efforts to reduce uncertainty in property rights to natural resources, and create instruments that encourage their proper use. These include implementation and development of a land law, land title and land register; development of an institutional and normative structure for forests and water; and establishment of market mechanisms for allocating rights to harvest fisheries and manage mining activities to control pollution.

The Bank will also support the development of national environmental institutions and legislative and judicial initiatives; the development of sector institutions in agriculture, forestry, mining, fishing and industry; the development of regional and local environmental authorities, and the creation of special entities for watersheds and other areas with severe problems; and the promotion of private sector participation in decision-making and improving compliance with environmental laws.

The Bank will support program development in water availability and quality in the country's major cities, solid waste disposal and air pollution in principal metropolitan areas, and sustainable agricultural development programs in high poverty areas. Agricultural development programs will be carried out in the Sierra region. The programs will include a central irrigation infrastructure component, sustainable agricultural practices, reforestation and biodiversity conservation, and integration of small- and medium-sized farms to both the financial system and input and output markets.

ENVIRONMENTAL OPERATIONS

Overview of Investment Projects and Technical Cooperation

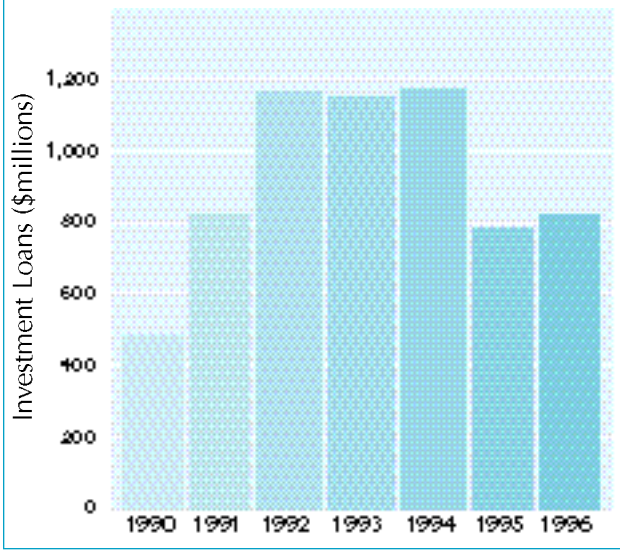
In 1996 the Bank approved twelve environmental and natural resources loans and Multilateral Investment Fund (MIF) grants (including water and sanitation) for a total of $815 million, up slightly from the $795.6 million loaned for ten operations approved in 1995 (See Figure 1). An increasing emphasis on environmental and natural resources policy formulation, management, and institutional and legal frameworks is reflected in the approval of 50 technical cooperation operations in 1996 for a total of $27.2 million, a 70% increase over 1995.

Seven investment loans totaling of $677.9 million were approved to improve the quality of the urban environment, including flood control and sanitation operations in Brazil, Ecuador and Mexico; wastewater collection, treatment and disposal operations in Nicaragua and Uruguay; and potable water supply and sewerage operations in Bolivia and Venezuela. An omnibus environmental services program was approved for the Guatemala City metropolitan area covering solid and waterborne waste collection, treatment and disposal, along with protection and enhancement of urban green spaces to safeguard waterways, reduce the risk of landslides, and provide space for urban recreation activities.

Three investment operations for a total of $129 million were dedicated to the management of natural resources. In Nicaragua, a socioenvironmental and forestry development program will promote the sustainable management of natural resources and protected areas and improve the institutional framework for environmental management. The program contains components for improved forestry and agricultural techniques on 4,700 small- and medium-sized farms, establishment of river bank stabilization and green belts in twenty municipalities, and organization of conservation systems to protect 19,000 hectares of unique ecosystems. A loan to Guatemala will encourage the sustainable development of the Peten region. Specifically, the program will

contribute to the management of the Maya Biosphere Reserve by supporting land tenure regularization, protecting cultural heritage through restoration of historical sites, and contributing to the management of natural resources by implementing projects for sustainable agriculture especially targeted to low-income populations. A loan to Colombia will provide sustainable development alternatives in remote territories which have been affected by the production of and trafficking in illegal substances. Two MIF grant operations for Central America support investment funds that will allow small private enterprises and NGOs to develop commercially viable projects that benefit the environment.

Figure 1. Environmental and Natural Resour ces Loans, 1990–96



Natural Resources Conservation

● NICARAGUA: Socioenvironmental and Forestry Development Program

The Bank approved a $15.3 million loan to promote the sustainable management of natural resources and protected areas, and improve the institutional framework for environmental management. The program will promote the conservation of natural resources, with emphasis on forest protection and prevention of soil erosion.

A component of the program provides for training poor indigenous communities on techniques for protection against forest fires, diseases and pests. The program will also provide training in the production of handcrafted goods. River banks will be stabilized and green belts will be established in 20 municipalities, and conservation systems will be organized in five areas to protect 19,000 hectares of unique ecosystems. These practices will slow the rate of deforestation, erosion and sedimentation; increase plant and tree cover; and improve water resources management in degraded basins.

An institutional strengthening component will improve the managerial capacity of grassroots organizations, local nongovernmental organizations, the Ministry of Environment and Natural Resources, and the National Forestry Commission. The project will support initiatives to create foundations for the management of protected areas, and environmental education campaigns on the management and conservation of natural resources, appropriate energy saving techniques, and techniques for preventing contamination by agrochemicals.

By promoting the rational use of natural resources, the program will enhance the economic sustainability of agroforestry activities in the project areas, raising incomes and the quality of life of the low-income population in parts of the country that have the highest poverty indices. It has been determined that most of the direct beneficiaries will be producers with incomes below the poverty threshold.

● GUATEMALA: Sustainable Development Program for Peten

The Bank approved a $19.8 million investment loan to support the sustainable management of natural resources and the preservation of archeological sites in the Peten region. The resources will contribute to the environmental management of the Maya Biosphere Reserve by supporting the legalization of land tenure for 4,500 families living in the area surrounding the reserve through a property cadastre, title processing and the establishment of a land register.

The project will help restore archeological sites representing one of the highest concentrations of Mayan monuments in Meso-America. It will also support the implementation of sustainable economic activities by creating jobs in site restoration, administration and surveillance. Employment opportunities for the local population will be available in microenterprises, as concession operators at arts and crafts and food stands, and as tourist guides. This component includes training for community members, promotion and a small revolving fund to provide seed capital for microenterprises.

Sustainable development pilot projects in forestry and agroforestry will be carried out in southern Peten, thereby diminishing the need for overuse and development of new forest areas. Sustainable agricultural activities include soil conservation (living and other green manure, crop rotation, improved varieties) and agronomic measures (contour farming, green manure, crop rotation, improved varieties), diversification of crop production (pineapple, chile, sesame seed) and enrichment of family vegetable gardens. Agroforestry and forest grazing

systems include living barriers and other combinations of crops and trees, small orchards, small livestock raising, and forest thicket reserves for energy and other local uses. The program will finance technical services and inputs (plants, seeds, materials for minor infrastructure) for setting up the systems. Community forest management will take place under cooperative forests and concessions to state-owned land to be granted to communities by procedures already established in Peten.

The program will also provide environmental education, training, and other assistance to modernize municipalities and public institutions, strengthen grassroots organizations, and promote community participation in the protection and management of natural and cultural resources.

- COLOMBIA: Alternative Development Program

The Bank approved a $94 million loan to support the Colombian government's efforts to eradicate illicit drug crops and contend with violence in the eradication zones. This situation is compounded by an economic crisis resulting from the elimination of the region's main income-generating activity. The area involved is at the edges of the traditional agricultural frontier. The government of Colombia is executing an alternative development program, PLANTE, in municipalities where illegal crops have been removed. The PLANTE program preserves natural reserves, and improves infrastructure and urban and agricultural technology. Its objective is to contribute to the recovery of the environment and the social and productive development of these areas.

Specifically, the program will create and improve legitimate sources of rural income, support social development to reinstill cultural values and ethics, bolster the state's institutional presence in the eradication zones, and lay the foundation for sustainable local development. Alternative development efforts recognize that given the prices that illegal products command and the financing and marketing options available, eradication must be followed with alternative development efforts.

Program beneficiaries are small farmers previously

Table 1: Environmental Loans Approved in 1996 (US$ million)

Country	Project	Amount
Natural Resources Conservation		
Colombia	Alternative Development Program	94.0
Guatemala	Sustainable Development Program for Peten	19.8
Nicaragua[1]	Socioenvironmental and Forestry Development Program	15.3
		129.1
Urban Environment		
Bolivia	Basic Urban Sanitation Program	70.0
Brazil	Flood Control Program, Campinas	19.8
Uruguay	Metropolitan Montevideo Sanitation Program, Stage III	153.3
Nicaragua[2]	Environmental Improvement Progam, Lake/City of Managua	15.0
Guatemala	Guatemala City Metropolitan Environmental Program	34.8
Mexico[3]	Mexico Valley Sanitation Program	365.0
Ecuador	Slope Protection for Mt. Pichincha	20.0
		677.9
Other		
Central America	Environmental NGO Enterprise Development (MIF)	3.5
Central America	Support for Regional Environmental Fund (MIF)	4.8
		8.3
TOTAL		815.3

[1] In addition to the IDB loan, $6 million in cofinancing will be provided from the Nordic Development Fund.

[2] In addition to the IDB loan, $25 million in cofinancing will come from Germany and $5 million from the Nordic Development Fund.

[3] In addition to the IDB loan, $410 million in cofinancing will be provided by Overseas Economic Cooperation Fund of Japan.

engaged in growing illegal crops and other producers living in poor municipalities. Beneficiaries also include Amerindian communities in drug growing areas where sociocultural values have been eroded and the degradation of fragile Andean and Amazonic ecosystems has taken place.

Because this is the first operation of this type undertaken by the Bank, and the government of Colombia lacks experience in operations of this nature, the program's design highlights local decision-making, local control and quality of execution, seeking to avoid pitfalls that may result in wasted resources.

- REGIONAL: Support for Agricultural and Natural Resource Management Research

The Bank provided $6 million to support agricultural and natural resource management activities through ten projects in research, technology transfer, or training. Specific activities in the 1996 program included the development of information systems for the management of natural resources (to be conducted by the International Center for Tropical Agriculture, CIAT); genetic improvement of wheat (managed by the Center for the Improvement of Maize and Wheat, CIMMYT); research on potatoes and other Andean crops (administered by the International Potato Center, CIP); work on agroforestry systems in the humid tropics (through the International Center for Research in Agroforestry, ICRAF); strengthening of national research systems (through the International Service for National Agricultural Research, ISNAR); management of secondary tropical woodlands (by the International Center for Forestry Research, CIFOR); development of indicators of the sustainability of Andean ecosystems (via PROCIANDINO, a subregional cooperative program of technology development); soil conservation through direct seeding (by PROCISUR, a similar kind of program operating in the southern cone countries of South America); and a series of studies to be conducted by CARDI, a regional research organization covering the Caribbean.

- REGIONAL: International Seminar on Urban Greening in Latin America and the Caribbean

In developed regions, the population is already predominantly urban, but it is in developing countries that a rapid transformation from rural to urban societies is currently taking place. It is predicted that by the year 2000 over 75% of the people of the region will live in towns or cities. During 1996, the Bank sponsored a seminar to exchange experiences in urban greening in Latin America and to generate guidelines for Bank action in the area of financing "green" urban investments as part of general urban development and environmental programs. Over 280 attendees from 26 countries participated in the workshop.

Urban greening is the planned, integrated and systematic approach to the management of trees, shrubs and other vegetation in urban and peri-urban areas for their contribution to the environmental, physiological, sociological and economic well-being of urban society. It is multifaceted, dealing with street greens, urban parks, open fields, private green areas, conservation and protection areas in or near cities.

- REGIONAL: Forest, Land and Other Natural Resource Management and Ownership by Indigenous Peoples in Latin America

The purpose of this $80,000 technical cooperation is to study the management of forested lands by indigenous peoples, including lands that are either occupied, claimed or legally owned. The current legal, ecological, and social situations will be analyzed, and the future productivity of natural resources on indigenous lands as a function of resource tenure arrangements and management decisions will be assessed. While the focus is on renewable natural resources, especially forests, the impact of legal arrangements for mineral extraction also will be considered.

- URUGUAY: Human Resources and Training Program for the Forestry Sector

Agriculture is one of the cornerstones of Uruguay's economy: it accounts for 13% of the country's GNP, provides employment for 17% of the economically active population, and is the main source of foreign exchange, generating some 80% of the nation's export revenue. Agriculture's fastest growing subsector is forestry, accounting for 2.4% of GNP and 18.4% of agricultural production in 1990. However, despite sustained growth, the lumber industry has not been able to keep pace with competition in foreign markets. Most forestry initiatives have fallen short of their goals, hindered by low levels of worker skills at all stages (from nursery management through the processing of forest products), the shortage of skilled technical staff in industry, the seasonality of employment (dependent on production cycles), and inadequate rural road networks.

This $1.5 million technical cooperation aims to enhance forestry productivity within a national regulatory framework that supports both the industry and environmental protection. Specifically, the program will seek to establish new working methods and to strengthen institutional capacity for training the necessary human resources with an eye to promoting self-sustainability in the lumber industry.

- REGIONAL: Feasibility Study for the Ibero-American Climate Project

The purpose of this $1.2 million technical cooperation is to assist the region's national meteorological and hydrologic institutions (NMHIs) to become capable of providing the most reliable and detailed predictions possible of meteorological phenomena and the climate in the countries of the region, in order to contribute to economic and social development. The program focuses on designing ways to better equip these institutions to monitor, interpret and disseminate climatic data to assist weather sensitive economic activities (such as agriculture, transportation, tourism, fisheries and energy production), and to better predict and deal with natural disasters. The project will contribute to the modernization of the national meteorological and hydrologic institutions, allowing them to provide the services demanded by the main users.

The program components include the expansion and modernization of existing atmospheric behavior observation and data retrieval networks; modernization of existing communications systems; modernization of existing climatological data banks; and the strengthening of the institutional capacities of the NMHIs. Countries benefitting from the technical cooperation include Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Mexico, Paraguay, Peru, Uruguay and Venezuela.

Coastal Zone Management

- PERU: Modernization of Training in the Fishery Sector

The Multilateral Investment Fund approved $3 million in nonreimbursable financing to modernize training in Peru's fisheries sector and to strengthen the national capacity to implement a resource management system for tuna, sharks and other deep-water fish. Program trainees will receive hands-on instruction on board modern long-line vessels in long-line fishing techniques. A pilot training program in fish handling and processing will also be carried out. The upgrading of training is essential to provide an experienced labor force that can work successfully with new technologies, since the current training program for workers in the fisheries sector is almost exclusively focused on traditional fisheries with little emphasis on competitive marine technologies.

The program also includes fisheries management training for Peruvian scientists and technicians. Peru manages only a few of its fisheries at present. Most efforts have been geared to the anchovy and giant squid fisheries which comprise a high percentage of the overall catch, and are high value resources domestically and internationally. However, as additional species begin to gain in importance, effective management is essential to ensure the sustainability of the resource.

Because of its favorable oceanographic conditions and submarine topography, Peru has some of the most abundant fish resources in the world. These resources have been harvested successfully during the past 30 years, making the fishing industry one of the most dynamic sectors of the Peruvian economy, accounting for about 15% of Peru's total exports.

The University of Piura, a private institution, will coordinate the project. It will be assisted in carrying it out by the National University of Piura, a public university; *Consorcio Pesquero;* and the Institute of Fisheries Technologies.

- BRAZIL: Development of an Action Plan for Abrolhos National Marine Park

The Bank approved $150,000 in nonreimbursable financing to reactivate the on-site management of Abrolhos National Marine Park and nearby coastal areas, a complex of volcanic islands, coral and algal reefs, and shallow sea occupying 3800 km^2 due east of the coastal town of Caravelas in the state of Bahia. An expanded and more intense management of the marine park will help to bring conservation efforts in line with increasing coastal development and use of the park. Direct environmental benefits are expected in terms of improved protection of coral reefs and associated marine fauna, including several endemic species. This is also the main reproductive area for humpback whales in the southern hemisphere.

The project will focus on establishing a conservation network for the Abrolhos complex that includes seminars, sustainability analysis and short-term strengthening of local NGOs active in park management. The establishment of partnerships for conservation will benefit local organizations dependent on ecotourism. In addition, the financial sustainablility strategy of the Abrolhos National Marine Park administration will be strengthened.

This operation includes a marine environmental awareness campaign to sensitize local and national media to marine conservation issues in Brazil. Environmental education activities will target schools, visitors and local businesses. Finally, a combined national/ international marine conservation awareness campaign will be used as a basis for fund-raising.

- BRAZIL: Pantanal Waterfowl and Nearctic Shorebirds Survey

The Bank approved $85,000 in nonreimbursable cooperation to determine the number and distribution of water bird groups in order to provide indicators of wetland productivity and biodiversity in areas affected by economic development. The information gathered will be used for conservation planning in national parks and reserves, management of fisheries, hunting, and ecotourism, and

amelioration of the impact of industrial activities. The information will also be useful in identifying the potential impact of infrastructure projects, such as roads and waterways, on water bird populations.

The project will undertake aerial surveys of water birds during the low-water season when they are most concentrated on remaining wetlands, and northern shorebirds are staging in the area. The work will rely on the latest technologies and could be easily integrated into ongoing satellite analyses.

- REGIONAL: International Coral Reef Congress

This $300,000 technical cooperation cosponsored the Eighth International Coral Reef Congress that was held in Panama City, to discuss the threats facing tropical marine ecosystems and measures for their protection and management. Coral reefs are considered among the earth's most diverse marine ecosystems, serving as "indicator habitats" for trends in tropical coastal areas. In the Americas, coral reefs are found mainly along the Pacific and Caribbean coasts of Central America, throughout the Caribbean, and in Mexico, Ecuador, Colombia, Venezuela and Brazil. These coral reefs are considered important as reservoirs of marine biodiversity, natural breakwaters against wave erosion and suppliers of beach sand, habitat for reef fisheries, indicators of good water quality and sites for underwater recreation and tourism.

Approximately 1,800 marine scientists and resource managers attended the conference, which was co-hosted by the University of Panama and the Smithsonian Tropical Research Institute. Other sponsoring institutions included the government of Panama, the United Nations Environment Program, the European Union, and several private organizations.

The Bank financed the participation of 100 individuals from Latin America representing natural resources management agencies, marine research institutes, universities and nongovernmental organizations active in marine conservation. Another component of this technical cooperation financed the design of specialized workshops during the conference, focusing on the status of coral reefs in Latin America and the Caribbean, and a bilingual traveling exhibit that is currently being displayed throughout the tropical and subtropical Americas.

- REGIONAL: Workshop on a Strategy for Integrated Water Resource Management

The Bank approved a $170,000 technical cooperation to finance a workshop on integrated water resources management in San Jose, Costa Rica. Its purpose was to confer with national authorities on the development of a strategy for integrated water resource management in Latin America and the Caribbean. Issues discussed during the workshop included the main water resources problems in Latin America. In addition, participants focused on the development of a conceptual and methodological framework for integrated water resources management, conditions that would affect its application, and options for Bank action. The workshop was instrumental to the development of the Bank's strategy in this area as it furthered the process of discussion and consultation with stakeholders and interested parties.

Urban Environment and Pollution Contr ol

- BOLIVIA: Basic Urban Sanitation Program

This $70 million loan for the expansion and improvement of urban water supply and sewerage services involves the construction of 70,000 new water and sewerage connections, benefitting 350,000 persons. In addition, the program will promote greater private sector participation in the supply of water and sanitation services, consolidate the regulatory framework, and strengthen the national water board. Local companies or cooperatives responsible for delivering water and sanitation services in the participating cities will also be strengthened.

- BRAZIL: Flood Control Program in Campinas

This $19.8 million loan to the municipality of Campinas, Brazil, envisions the construction of storm sewers, water channels, basic sanitation, road works and improvements in housing and services for local residents. The program will reduce the damage caused by flooding, helping to improve living conditions and reduce the spread of waterborne diseases. The completed works will increase the value of urban property presently affected by flooding, which will have a positive impact on the municipality's finances. Transportation will be significantly improved through the rehabilitation of roads that are subject to flooding.

The project includes the resettlement of families currently living in high risk areas. This component of the program, combined with the provision of basic infrastructure and social services in the resettlement areas, will improve the quality of life for about 1,100 families. Reclamation of the areas that are abandoned when the families are resettled will prevent the establishment of new illegal settlements and preserve native plant cover. The areas will be used for recreational purposes where the terrain permits. Local residents will be in charge of planting trees in the abandoned areas.

Additional components of the program include the strengthening of the municipal government in the areas of finances, human resources, planning, urban environment, reclamation of abandoned areas, and control of land use. As part of the program, a series of educational

activities will be conducted to enhance popular awareness of environmental protection and encourage community participation.

- URUGUAY: Metropolitan Montevideo Sanitation Program, Stage III

This $153.3 million loan will finance the third stage of a sanitation program for the Montevideo Metropolitan Area. The Bank provided $72 million in financing for the program's two previous stages. Reduced pollution resulting from the implementation resulted in a 50% increase in the public's use of Montevideo's beaches during the summer of 95/96. This loan is intended to improve and expand the sewerage and storm drainage systems in the departments of Montevideo and Canelones. As a result of program implementation, 140,000 people in the Montevideo area will have access to sanitation services, increasing population coverage in the area by eight percentage points. The program also establishes targets for reducing organic pollution from industrial and household sources and decreasing the heavy metals load in streams and in Montevideo Bay. Approximately 325 families living on the work sites will be resettled and their living conditions improved.

Finally, part of the resources will support the reorganization of the sanitation division of the Montevideo municipal government to improve efficiency and quality of operations, and establish a business cost accounting system. A master plan will be prepared for solid waste management in greater Montevideo and portions of the departments of Canelones and San Jose.

- MEXICO: Mexico Valley Sanitation Program

The Mexico Valley watershed covers 9,000 km^2 and includes Mexico City and part of the state of Mexico. This was once a closed watershed, but as the city grew, a system was developed to drain it and control flooding. However, population growth has created new sanitation problems. The situation is quite complex in the area since sanitation cannot be isolated from water provision and flood control. Mexican water administration authorities currently confront several critical problems related to resource management, irrigation capacity and water pollution. To help solve these problems, an integrated program has been designed with resources from the Bank ($365 million), the government of Japan ($410 million), and local funds ($260 million). The program includes the rehabilitation of the drainage system of the metropolitan area of the Valley of Mexico, and wastewater treatment investments. The drainage component is necessary to avoid flooding that may occur as a result of the deterioration of the main drainage system, caused in large part by subsiding soil conditions. The wastewater treatment component will treat a combined sewer flow of 74.5 m^3/sec, which is currently discharged without any treatment into the Mezquital Valley, severely affecting health, living conditions and the environment in the region. The investments are designed to meet recently approved water quality standards and to conform with the country's environmental health strategy.

The program also includes the implementation of an action plan and specific formal agreements between the federal government, the city of Mexico, and the state of Mexico, with the objective of increasing overall efficiency in water resources management in the metropolitan area of the Valley of Mexico. Targets for institutional efficiency, commercial efficiency and water tariffs have been designed as an integral part of the program. Also, in order to guarantee the benefits associated with wastewater treatment investments, the program includes a plan to control industrial effluents, a public health action plan and water quality monitoring in the irrigation district of the Mezquital Valley. In addition, specific pre-investment studies for recharging aquifers in the Valley of Mexico and improving potable water and sanitation systems in the Mezquital Valley are being considered.

- GUATEMALA: Guatemala City Metropolitan Area Environmental Program

The Bank approved a $34.8 million loan to the municipality of Guatemala City for a program to improve the quality and coverage of environmental services in the metropolitan area, and reduce environmental degradation caused by improper solid and liquid waste collection and disposal. The risk of landslides will be lessened and the soil in ravines, urban green spaces and the Cerro Alux reserve will be better protected, thereby safeguarding waterways, reducing sedimentation and increasing the number of parks and recreational areas.

The program will benefit directly or indirectly the entire population of the metropolitan area, which in 1995 was estimated at two million people. Its direct impact, however, will especially favor low-income groups. A solid waste management component will be of greatest benefit to an estimated 450,000 people who do not presently have access to these services. The environmental problems caused by the present disposal system and more than 500 clandestine dump sites will be alleviated.

The program also includes a component for the treatment of wastewater to reduce contamination of the watershed south of the city, which feeds the aquifers and the Teocinte reservoir, before draining into Lake Amatitlan. A component on environmental management and institutional development at the metropolitan level (nine municipalities), includes establishment of a metropolitan regulatory and enforcement agency for environmental services, municipal strengthening and environmental education.

- NICARAGUA: Lake Managua and City of Managua Environmental Improvement Program, Phase I

The Bank approved a $15 million loan for a program to improve environmental conditions and the quality of life of residents of Managua. The government of Germany is providing $625 million in cofinancing for wastewater treatment.

The program includes the environmental sanitation of the shores of Lake Managua which is presently a focus of infection for waterborne and vector-transmitted contagious diseases. This component includes the drastic reduction of breeding grounds for malaria carrying mosquitoes as part of a comprehensive disease control strategy, and a program of community education and participation. The program will benefit the entire population of Managua either directly or indirectly; however, its direct impact will center on the 120,000 people living on the shore of the lake. They constitute the neediest of the city's population with the highest level of unmet basic needs, living in unhealthy conditions and including a large percentage of families with incomes below the urban average.

The program also finances the rehabilitation and modernization of Managua's sewer system to prevent the surface flow of wastewater and the formation of sewage deposits on the shore of the lake. The type of treatment employed will prevent discharges of raw wastewater into the bay fronting the city, contributing to recuperation of the lake and making its recreational use possible. In addition, a plan will be drafted for the periodic monitoring and evaluation of pollutants in the lake in order to better plan short- and medium-term sanitation and environmental improvement measures.

- ECUADOR: Slope Protection for Mt. Pichincha

The Bank approved a $20 million loan to Ecuador to help control flooding and mudslides on the slopes of the Pichincha volcano near Quito. The volcano's eastern slopes and base lie within the limits of metropolitan Quito. Geomorphologically, the slopes are highly fragile and steep, and they are traversed by many creeks. The soil is predominantly of volcanic origin, naturally unstable and subject to a hydrologic regime that produces heavy downpours at certain times of the year. This natural phenomenon is aggravated by the activities associated with illegal settlement like the clear-cutting of forests, removal of plant cover and excavation for the erection of structures and laying of access roads, leaving an easily eroded soil unprotected.

The 1990 census counted 59 neighborhoods with about 55,000 inhabitants on the slopes of Mt. Pichincha. The coverage of trash collection in these areas (63%) and the disposal of refuse in creeks and vacant land (30%) give rise to clogging and breakdowns of the slope storm water drainage system and bring health problems in their train.

The flood control program has two parts: protection systems and community measures. The first part includes the construction of infrastructure for water and mudslide control, including the repair of sewers in the flood area, the promotion of soil conservation and other natural resources management techniques, and the improvement of weather, hydrology and landslide monitoring. The second part will include improved solid waste management, community training in the project area, public information campaigns and efforts to strengthen municipal management and urban planning practices that affect the environment.

- BRAZIL: Industrial Pollution Control and Solid Hospital Waste Management

This $76,000 technical cooperation was part of the preparation process for IDB Project BR-0169, Basic Sanitation Program for the Cities of Goiânia and Goiás and Fiscal Improvement for the State of Goiás. Goiás state is the most densely populated of Brazil's Central-Western region. Goiânia, the capital, with a population of 1.2 million distributed across six urban municipalities, is the region's largest city and one of its fastest growing urban areas. Population growth has been accompanied by rapid development in manufacturing and agroprocessing industries. However, many of the major industries lack waste treatment facilities, and some are running highly polluting processes. In addition, most of the existing waste handling equipment is technologically inadequate in terms of performance and monitoring devices. Contaminating wastes, including eutrophic substances and heavy metals, are disposed of without adequate treatment, especially by leather processing plants. Most industrial solid waste is dumped untreated in controlled and uncontrolled landfills in the outskirts of town.

As opposed to industry where waste control laws are in effect but lack enforcement, the hospital sector has serious institutional gaps and lacks a proper state legislative framework. For example, existing legislation does not make a clear distinction between domestic and special hospital waste. Therefore, the Solid Waste Department of the municipality is responsible for special hospital waste, although it lacks the legal tools and the technical equipment.

Studies of industrial pollution include demarcation of origin and impact areas of pollution, inventories of sources of pollution and analysis of pollutants, evaluation of relevant legislative acts, review of responsibilities, organization of databases and discussions of alternatives with recipient agencies. Hospital solid waste studies include identification of sources and destination of spe-

cial hospital waste, analysis of physical and chemical composition, evaluation of legal frameworks and discussion of alternatives with the Solid Waste Department of Goiâna municipalities.

- EL SALVADOR: Pollution Control in Critical Areas

Environmental deterioration, particularly water, soil and air pollution, is of great concern in El Salvador. Following the guidelines of the country's national environmental strategy, the government of El Salvador requested that the Bank consider financing a pollution control program. The objective of this $750,000 technical cooperation is to assist the government in designing a program for decontamination of critical areas, a project conceived as an initial phase in the effort to tackle environmental pollution. A component of the project will promote investments in solid waste management in small- and medium-sized cities, carried out by municipalities, and may include actions that cover a full range of activities from collection to final waste disposal.

A pilot project of integrated pollution control includes the development of an industrial pollution control plan, as well as small-scale investments for wastewater disposal and treatment, and solid waste management in the Lake Ilopango watershed. A key objective will be the protection of water sources and the potable water plant in the Cuaya River, which supplies water to more than 250,000 people in a densely populated area east of San Salvador. Other components of the program include air pollution monitoring and institutional strengthening for municipalities and executing units to carry out and administer pollution control investments.

- HAITI: Potable Water Sector Reform

Water services in Haiti are very limited and extremely unreliable. Only 53.2 % of the population of Port-au-Prince has access to potable water. Coverage is only 58.6% in secondary cities and 33.5% in rural areas. With little treatment and no controls, water quality is highly variable. In Port-au-Prince only an estimated 15% of the population have their own house connection; the rest gets water from neighbors, public standpipes, water tanks, street vendors or natural surface water sources. Water is severely rationed and supply to most house connections and public standpipes is limited to six hours per day.

This $900,000 nonreimbursable financing (including $350,000 donated by the Belgian Fund) will help design and prepare a reform program to improve the quality and cost-efficiency of potable water services in secondary cities and rural areas. The reform will be devised to improve local participation in decision-making and service oversight, and the systematic involvement of users in cost-sharing. The proposed reform consists of a long-term strategy to enhance the sustainability of future investments through the establishment of sound cost-recovery mechanisms.

- COLOMBIA: Industrial Pollution Reduction in the Aburra Valley, Medellin

The implementation of integrated environmental management strategies based on pollution prevention is a response to the imperative of reducing risks and minimizing impacts from industrial activities.

The valley of Aburra, with a population of over 2.5 million, is formed by ten municipalities, with the largest being the city of Medellin. In the metropolitan area, there are 200 mountain streams that collect rain water and an important percentage of residential and industrial wastewaters, and drain into the Medellin River. The existence of the mountain streams has permitted the region to easily collect and dispose of liquid wastes. The Medellin River, which divides the city in half and is crossed at least twice daily by a large segment of the population, transports residential and industrial wastewater through the center of the city. In most cases, the wastewater is untreated, creating serious health risks.

The purpose of this $75,000 nonreimbursable technical cooperation is to evaluate and, if necessary, design new procedures for monitoring industrial wastewater discharges and recommend ways to improve monitoring accuracy. Another effort involves initiating a pilot program for environmental auditing and water pollution reduction at the textile firm *Coltejer* in Medellin.

The studies carried out as part of this program are generating new opportunities and strategies to change business attitudes in favor of preventive environmental management, and the development of and compliance with voluntary programs and standards. The coordinator for the program, the National Association of Industrialists (ANDI), and the participants presented a seminar on their achievements at IDB headquarters for the benefit of Bank staff involved in pollution control programs. Their visit was financed by a $20,000 nonreimbursable technical cooperation.

- BELIZE: Solid Waste Management Project

The objective of this $566,720 technical cooperation is to develop plans for solid waste management whose implementation will improve public health, reduce environmental contamination and enhance the image of Belize in the ecotourism market through better solid waste management.

Wastes are currently disposed of in open burn dumps in all regions of the country. These dumps generate odor, leachate and air pollutants; their unsanitary conditions

result in disease and environmental degradation. Outside of Belize city, waste collection systems are rudimentary and, in small communities, nonexistent. Initiatives to reduce waste generation, or to use composting or recycling schemes have generally not been undertaken. Wastes are commonly dumped indiscriminately in mangroves, in the streets and elsewhere. The problem associated with solid waste management not only affects the health and welfare of the population but also the tourism industry upon which much of the Belizean economy depends.

All project activities will be oriented to the development of a national solid waste management plan, three regional plans and the design of three solid waste sanitary landfills. A primary goal of this project is to design a solid waste management system that is not a drain on government resources. The project will review the feasibility and benefits of private sector participation in the finance and management of portions of the solid waste system. The project will assist the government of Belize in arranging such participation where desirable, operating under close government supervision. User charges will be set to ensure that lower income communities are not denied services, while at the same time ensuring the technical, economic, financial and institutional viability of the operation.

Environmental Institutions

- PERU: Strengthening of Environmental Institutions

A $1.8 million nonreimbursable technical cooperation donated by the government of Japan, will contribute to the strengthening of the recently created *Consejo Nacional del Ambiente* (National Environmental Authority, CONAM) by supporting the design and establishment of a national environmental system. This technical cooperation will support the establishment of implementing regulations for the law establishing CONAM and the Forest Act, as well as update the diagnosis of the institutional and legal status of environment and natural resources in Peru.

As a result of this operation, Peru will have the basic elements of a system for the management of the environment and natural resources. The project supports the design of a proposal for a national environmental system that includes environmental impact assessment procedures and the preparation of regulations limiting environmental pollution. CONAM will be able to design an environmental policy in tune with the national development strategy, and to administer an authorization and monitoring procedure providing reasonable assurances that public and private investments will be made in a way that maximize positive, and reduce undesirable, environmental impacts.

Environmental Funds

- CENTRAL AMERICA: Financial Support for Environment Fund

The Multilateral Investment Fund granted $4.9 million for a new investment fund that will support small private companies in Central America that are dedicated to projects that will benefit the environment. In addition, the MIF approved a grant of $300,000 to enhance the viability of businesses supported by the fund.

The fund is sponsored by Environmental Enterprises Assistance Fund, Inc. of the United States and its Costa Rican subsidiary, *Empresas Ambientales de Centro América.* Other investors are the Swiss government and Citizens Energy. Total committed capital to the fund is $7.97 million, with serious discussions underway with other parties. Among the companies that will be supported by the fund are those that invest in energy efficiency, water treatment, pollution abatement and ecotourism.

- CENTRAL AMERICA: Environmental NGO Enterprise Development

This $3.5 million regional grant, executed by The Nature Conservancy-Costa Rica, will assist conservation NGOs in transforming their environmental income-generating activities into commercially viable small enterprises. Focal areas will include projects in agriculture, agroforestry, aquaculture, ecotourism, biogenetic prospecting and environmental education.

The project will assist in establishing a credit enhancement fund of $6 million to identify potential investors in small environmental NGOs. In addition, the project will create a $1 million revolving grant fund ($500,000 contributions from the Bank's Multilateral Investment Fund and The Nature Conservancy) to provide technical assistance to convert NGO ideas into bankable projects. An estimated 20 to 30 ventures will be managed during the seven-year duration of the project.

ENVIRONMENTAL FEATURES OF OPERATIONS IN OTHER SECTORS

Environmental reports on operations are now available from the Bank's Public Information Center (Tel. 202-623-2096) or through the Internet at *http://www.iadb.org.* These reports, made available before the Board of Executive Directors considers a project, include the Bank's conclusions and recommendations regarding environmental impacts and preventative or mitigatory measures. Because this information is readily available elsewhere, only the projects requiring environmental summaries (Category III and IV) are shown below.

Categories 3 and 4 Projects Approved by the CMA and the Bank in 1996

Project No.	Project Name	Sector Description/Code	Env. Class.	Amount US$	Date
AR0126	Ports Modernization I	Ports (TR-PUE)	3	104,000,000	30 October 1996
AR0162	Loan TC Pre-investment II	Institutional Development (PR-INS)	3	25,000,000	17 April 1996
AR0163	Neighborhood Improvement & Sites & Services	Sites and Services (DU-LOT)	3	102,000,000	17 July 1996
AR0164	Provincial Support Program Buenos Aires	Reform and Public Sector Support (RM-PUB)	3	350,000,000	11 December 1996
AR0195	Electric Transmition "Edenor"	Power Distribution (EN-DIS)	3	120,000,000	2 October 1996
BH0018	Power Expansion Program II	Thermo Electric Energy (EN-GTE)	3	56,000,000	6 November 1996
BO0125	Basic Urban Sanitation	Water Supply (OS-AGU)	3	70,000,000	4 December 1996
BR0199	Health Sector Reform and Investments	Health Programs (SA-PRG)	3	350,000,000	18 September 1996
BR0210	Favelas Sao Paulo Rehabilitation Program	Housing (DU-VIV)	3	150,000,000	10 July 1996
BR0212	Urban Development Parana	Urban Development (DU)	3	249,000,000	28 February 1996
BR0216	Fernao Dias Highway Stage II	Major Highways (TR-TRO)	3	275,000,000	4 December 1996
BR0234	Campinas Flooding Control Program	Sewerage (OS-ALC)	3	19,800,000	17 July 1996
BR0235	Yellow Line Concession Road	Road Programs (TR-VIA)	4	25,000,000	14 February 1996
CO0177	Transmetano Gas Pipeline	Gas Pipelines (EN-GAS)	3	51,000,000	18 December 1996
CO0179	Loan TC Privatization & Infrastructure Concession	Reform and Public Sector Support (RM-PUB)	3	25,000,000	8 May 1996
CO0185	Termovalle I Thermal Power Plant	Thermo Electric Energy (EN-GTE)	3	95,400,000	30 October 1996
CO0196	Alternative Development Program	Agriculture (AG)	3	90,000,000	18 December 1996
EC0143	Laderas de Pichincha Project	Environmental Programs (PA-AMB)	3	20,000,000	3 July 1996
EC0158	Social Investment Fund Support II	Social Investment Fund (IS-FIS)	3	45,000,000	11 December 1996
GU0071	Social Investment Fund	Social Investment Fund (IS-FIS)	3	42,300,000	31 July 1996
GU0073	Environmental Mgmt Guatemala Metro Area	Environmental Programs (PA-AMB)	3	34,800,000	13 November 1996
GU0081	Sustainable Development of Peten	Environmental Protection (PA)	3	19,800,000	26 November 1996
GU0099	Community Participation for Peace Consolidation	Social Investment (IS)	3	50,000,000	13 November 1996
GY0025	Social Impact Amelioration Stage II	Social Investment Fund (IS-FIS)	3	17,000,000	20 November 1996

continued

Project No.	Project Name	Sector Description/Code	Env. Class.	Amount US$	Date
GY0048	Electricity Sector Program	Rural Electrification (EN-ELE)	3	45,000,000	26 November 1996
HA0037	Social Investment Help Fund	Social Investment Fund (IS-FIS)	3	27,000,000	13 November 1996
HA0046	Investment Sector Loan ISL	Reform and Promotion of the Financial Sector (RM-FIN)	3	2,495,000	11 December 1996
HA0046	Investment Sector Loan ISL	Reform and Promotion of the Financial Sector (RM-FIN)	3	52,495,000	11 December 1996
HO0119	Modernization of Agricultural Technology	Agriculture (AG)	3	15,000,000	2 October 1996
JA0044	Northern Coastal Highway Improvement	Major Highways (TR-TRO)	3	59,500,000	26 November 1996
ME0179	Sanitation for the Valley of Mexico	Sewerage (OS-ALC)	3	365,000,000	4 December 1996
NI0025	Forestry Resources Management Conservation Program	Flora and Fauna Protection (PA-PRO)	3	15,300,000	17 January 1996
NI0027	Lake & City of Managua Environmental Improvement	Water Pollution Control (PA-AGU)	3	15,000,000	26 June 1996
PE0094	Aguaytia Gas and Power Project	Energy (EN)	4	60,000,000	11 December 1996
PE0097	Investment Sectoral Loan	Reform and Promotion of the Financial Sector (RM-FIN)	3	150,000,000	18 December 1996
PE0101	Social Development Compensation National Fund	Social Investment (IS)	3	300,000,000	19 June 1996
PN0032	Agricultural Services Modernization Program	Agricultural Development (AG-AGR)	3	33,600,000	18 March 1996
PN0082	Housing Program	Housing (DU-VIV)	3	26,400,000	18 September 1996
PN0097	Basic Infrastructure Sector Reform Program	Reform and Public Sector Support (RM-PUB)	3	123,340,000	20 November 1996
PR0030	Yacyreta Transmission System	Power Distribution (EN-DIS)	3	50,000,000	28 February 1996
PR0035	Road Corridors	Major Highways (TR-TRO)	3	82,300,000	26 June 1996
PR0075	Social Investment Program	Social Investment Fund (IS-FIS)	3	20,000,000	22 May 1996
RG0037	Credit Program for Small Caribbean States	Credit Programs (OT-CRE)	3	37,000,000	8 May 1996
TT0043	National Highway Program	Major Highways (TR-TRO)	3	120,000,000	26 June 1996
UR0062	Infrastructure Dairy Enterprises	Agricultural Productivity (AG-PRO)	3	40,000,000	7 February 1996
UR0089	Sanitation of Montevideo & Metropolitan Areas	Water Supply (OS-AGU)	3	153,300,000	11 September 1996
UR0107	Modernization of Secondary Education	Education (ED)	3	80,000,000	13 March 1996
VE0055	Low Income Housing Program	Housing (DU-VIV)	3	52,000,000	15 May 1996

IV. COOPERATION FOR SUSTAINABLE DEVELOPMENT

A MAJOR EVENT: THE SANTA CRUZ DE LA SIERRA SUMMIT

The Bank has a strong tradition of supporting international and regional summit meetings on environment and sustainable development.[1] Since UNCED, the Bank has played a major role in the implementation of Agenda 21. The same is true in the case of implementation of the Action Plan of the Summit of the Americas. The Bank is actively involved in the partnerships established at the December 1994 Summit of the Americas, and coordinates its actions closely with other agencies involved in the region.

The first Summit of the Americas was held in Miami in December 1994 to advance the prosperity, democratic values, institutions, and security of the western hemisphere. At the Summit, the heads of state and government of the Americas agreed on a Declaration and Plan of Action with a set of commitments. The Organization of American States (OAS) and the IDB were called upon to assist the countries in the implementation of these commitments. The Summit resolved to work toward the establishment of the Free Trade Area of the Americas with negotiations to be concluded no later than 2005. Several partnerships were established as part of the adopted Action Plan: the Partnership for the Sustainable Use of Energy, the Partnership for Biodiversity and the Partnership for Pollution Prevention. It was agreed that progress on these and other areas was to be discussed at the 1996 Summit Conference on Sustainable Development in Santa Cruz de la Sierra, Bolivia.

The Bank was involved in preparations for the Santa Cruz Summit of the Americas on Sustainable Development throughout 1996. It provided support for the preparation of several technical documents dealing with water resources, sustainable forestry and environmental valuation. It also actively followed the technical preparation of the Action Plan. More importantly, the Bank has supported the full and active participation of civil society in the Summit process by financing a process of public consultation and participation of representatives of civil society of the countries of Central America and the Caribbean to discuss and analyze issues and the Summit's agenda. The consultations were organized by the Ecuadorean NGO *Fundación Futuro Latinoamericano*, and were presented in a document prepared for the Summit called *There is no Sustainable Development without Effective Public Participation (Sin Participación Ciudadana Efectiva no Habrá Desarrollo Sostenible).*

The Summit's agenda and its priorities mirror the areas identified in the Bank's Eighth Replenishment on equitable economic growth, the social dimensions of sustainable development, a healthy environment, public participation, the development and transfer of technology and strengthening of the legal framework for sustainable development. As well, the spirit of the Summit's Action Plan coincides with the Bank's ongoing support and lending operations. The Bank prepared the document *Investing in a Sustainable Future* to inform the heads of state meeting in Santa Cruz of the Bank's present and future efforts in response to the call of the Santa Cruz Summit to international organizations in support of its Action Plan.

[1] For the 1992 United Nations Conference on Environment and Development (UNCED), the Bank and UNDP collaborated in the preparation of the study *Our Own Agenda* by the Latin American and Caribbean Commission on Development and Environment in order to promote a regional vision on sustainable development. Since 1992, the Commission prepared other studies, such as *Amazonia without Myth* and *Our Own Agenda for the Americas* in preparation for the Summit of the Americas in December 1994. For the Santa Cruz Summit, the Commission prepared the study *Dawn in the Andes* which offers a new vision of sustainable development for the Andean region.

OTHER COOPERATION IN KEY THEMATIC AREAS

Water Resources

Outreach activities in water resources focused on three areas: (i) consultations in the preparation of the Integrated Water Resources Management (IWRM) Strategy Paper (see Chapter II); (ii) dissemination of water resources technologies and practices; and (iii) establishment of links with other institutions and agencies for present and future cooperation and coordination of efforts.

During 1996, the Bank undertook an extensive internal and external consultation process in the area of integrated water resources management. This included meetings and organization of events for internal consultations with different Bank units, including the Policy Committee of the Board, the three regional operations departments, the Evaluation Office and the office of the Chief Economist; external consultations with NGOs and with regional and international organizations and donor agencies both of regional and global relevancy in the area of water resources; and the organization and attendance to inter-American consultation meetings with country water resources officials from all LAC countries. This effort resulted in the preparation of a first draft of the Bank's IWRM Strategy Paper.

Dissemination of water resources technologies was made in collaboration with the operational regions, regional organizations such as CATHALAC of Panama, Case Western Reserve University, the Bank's GIS Laboratory and consultants, for the application of selected water resources/GIS models. Dissemination of water resources management practices following the guidelines published by the Bank's Environment Division in 1996 was made in collaboration with the government of Paraguay and countries of the Plata Basin, the *Instituto Italo Latinoamericano* of Italy and Guatemala's *Universidad del Valle*.

A special effort was made to establish and strengthen links with other relevant water resources organizations and agencies, both for cooperation in formulating the IWRM strategy, as well as for future cooperative efforts. These included the UN Economic Commission for Latin America and the Caribbean in watershed management and water legislation; the UN World Meteorological Organization in the area of strategy formulation and feasibility studies for eventual future investment projects; MIT and IHE of The Netherlands for possible future technical cooperations in water resources technology and capacity building; the Global Water Partnership, the World Bank, the Economic Development Institute and UNDP for coordination of agencies' efforts in IWRM and possible future joint technical cooperations; and the OAS and the Technical Organizing Committee for the Santa Cruz Summit on Sustainable Development, in the water sector.

As a follow up to the regional workshop on a strategy for integrated water resources management (see Chapter III) held in San Jose, Costa Rica, the Bank organized a seminar on economic instruments for integrated water resources management. Participants discussed the advantages and disadvantages of economic measures such as privatization, water markets and tradeable water rights as instruments for integrated water resources management in Latin America and the Caribbean. The seminar was attended by IDB headquarters and field offices staff (mostly natural resources/water resources economists and engineers), and representatives from the World Bank, the University of California at Davis, Brigham Young University, the University of Colorado, John Hopkins University, Massachusetts Institute of Technology, USAID, the International Food Policy Research Institute, the Economic Commission on Latin America and the Caribbean, the Presidential Commission for Modernization of El Salvador and the United Nations Development Program. The proceedings of the event will be available in early 1997.

Coastal and Marine Resources

Outreach activities in this area were largely aimed at obtaining suggestions for the Bank's coastal and marine resources management strategy under preparation (see Chapter II). Presentations and discussions took place at the Eighth International Coral Reef Congress held in Panama in June. A one-day workshop was held to discuss the status of coral reefs in Latin America and the Caribbean. Some of the major issues covered were the interface between fisheries and the health of reefs; impacts of deforestation on reefs, and the coverage provided by the region's network of marine protected areas.

The Bank also participated in a two-day marine and coastal workshop held in October as part of the World Conservation Congress in Montreal. Aimed at reviewing the state-of-the art in marine conservation, the workshop dealt with integrated coastal management, marine protected areas, sustainable fisheries and international marine law and policy.

Rural Development

The rural development strategy being prepared by the Bank focuses on reducing rural poverty. At the beginning of the 1990s and for the first time in the region, there were more poor people living in cities than in rural areas. However, conditions of extreme poverty were more common among the rural poor. Because over 60% of the estimated 70 million rural poor are *campesinos* with limited access to land, and more than 30% are landless and

indigenous people, traditional agricultural options would not be a viable solution.

In order to develop a strategy to address the particular needs of the region's rural poor, the Bank held meetings with the International Food Policy Research Institute, the World Bank and others. Experts from the World Bank's Agriculture Department made two presentations to IDB staff during 1996. The first was a discussion of the World Bank's rural development action plan. The second was a summary of the World Bank's operational experiences in land tenure and land reform in Latin America. The IDB also participated in the World Bank's Conference on Sustainable Development, at which President Iglesias gave a presentation on rural development in the region.

In 1996, the IDB hosted a technical workshop to discuss a background paper on strategies for rural development prepared by a leading agricultural economist. Preliminary drafts of the rural development and agriculture strategies were discussed at meetings with FAO and GTZ staff.

The Regional Fund for Agricultural Technology

The Bank's President and Vice President and representatives of ten nations signed an agreement to establish an endowment fund to finance high priority strategic agricultural research at a special meeting of the Regional Fund for Agricultural Technology that took place during the Board of Governors Meeting in March 1996. The Fund is expected to reach $200 million and generate an annual flow of resources of at least $10 million. The resources from the Fund will be allocated on a competitive and nonreimbursable basis at the regional and subregional level. Funded research will focus on increasing the productivity of food crops and on the sustainable management of natural resources. The Fund, expected to be consolidated over a three-year period, would correct a shortage in the availability of sustainable medium- and long-term financing for regional agricultural research activities, and will provide a forum for discussion of research priorities at the regional level.

At another Fund meeting in San Pedro Sula, Honduras, five Central American countries and Panama, represented by the ministers of agriculture, joined the Fund. The first meeting of the Fund's interim board of directors took place in Cartagena, Colombia in July. A draft version of the manual of operations was discussed and approved after revisions, and the terms of reference to develop the Fund's medium-term plan for 1997-99 were approved. Consultants working on that plan met for an inaugural technical meeting in Bogota, Colombia, in November.

Agricultural Research

A jointly authored IDB/World Bank paper on institutional change and financing of agricultural research in Latin American countries (see Chapter V) was presented at the international meeting, Global Agricultural Science Policy for the Twenty-First Century, held in Australia in August. A joint meeting of the International Food Policy Research Institute and the Inter-American Institute for Cooperation in Agriculture was held in September to discuss agricultural research. The effort is funded in part by the IDB's regional technical cooperation program and is part of the Bank's sustainable agriculture strategy. In the same month, the IDB held a technical workshop on planning, monitoring, and evaluation of agricultural research in Latin American countries where the results of a regional technical cooperation project executed by the International Service for National Agricultural Research (ISNAR) were presented. A technical meeting at ISNAR in The Hague, The Netherlands, was held in November to present the IDB/World Bank paper on financing agricultural research and to discuss progress on the Regional Fund for Agriculture Technology.

Energy

Six seminars dealing with the efficient use of energy, renewable energy and deregulation of the energy sector were held in 1996. Seminar topics included discussions of research dealing with planning and competition in electricity; World Bank activities in energy efficiency, renewable energy and rural electrification; and distributed energy resources and deregulation of electricity in the United States. Several meetings of the consultative group on energy strategy were also held. Bank staff participated in conferences and meetings of the Steering Committee for the Implementation of the Outcomes of the Hemispheric Energy Symposium, and the Advisory Committee for the European Commission's ALURE Program.[2]

Biodiversity

The Eighth General Increase in Financial Resources gives the IDB a mandate to support the conservation of biological diversity and local community development. Operations addressing environmental problems, especially global problems, must take imaginative approaches and consider the availability of financing on concessional terms for environmental projects and components with distinctly global benefits (including projects related to the Biodiversity Convention). This mandate has to be translat-

[2] ALURE is an energy sector economic cooperation program between the European Union and Latin America.

ed into a practical set of internally consistent and feasible options that can be evaluated and implemented at the operational level.

IDB staff participated in a workshop entitled Mainstreaming Biodiversity for Rural Well-Being organized by the World Bank as part of the Environmentally Sustainable Development Conference held on September 25–27 in Washington, D.C. Subsequently, the IDB hosted a workshop on investing in biodiversity conservation, inviting interested Bank staff and representatives from the World Bank, other international and nongovernmental organizations and universities. The purpose of the workshop was to provide an introductory overview of the context for IDB involvement in biodiversity conservation programs and to define specific recommendations on the Bank's role in financing biodiversity conservation. To initiate a discussion on the Bank's role, the comparative advantages of the IDB in financing conservation of biodiversity and the cross-sectoral role of biodiversity conservation were also analyzed. The workshop addressed innovative financing mechanisms and possible modifications in IDB policy and procedures to overcome existing constraints in financing biodiversity conservation. Workshop proceedings will be available early 1997.

Forests

The World Commission on Forest and Sustainable Development organized a hearing on forestry policies in Latin America which was held in San José, Costa Rica. The Commission's Science Council prepared papers that summarized the current status of Latin American forests and the role that forests play in contributing to the amelioration of both local and regional climates. Presentations also summarized the implications of certain environmental problems for the formulation of alternative forest conservation management and reforestation strategies. Important contributions were facilitated by the IDB in the areas of sustainable and equitable use and management of forests, trade and the environment, and financial mechanisms.

OTHER NOTEWORTHY ISSUES AND EVENTS

MERCOSUR and the Environment

The European Environmental Bureau, with the support of the European Commission, the Friedrich Naumann Foundation and the IDB, organized a meeting in Brussels, Belgium on MERCOSUR, the European Union and the Environment. Attending the meeting were representatives of nongovernmental organizations from the MERCOSUR and European countries, and officials from several governments and international organizations. The participants discussed environmental issues of particular relevance to the MERCOSUR countries, such as biodiversity conservation, infrastructure, the urban environment and trade liberalization. As a result of the meeting, a network of European and South American NGOs was established to strengthen collaboration between them. A presentation on the role of the IDB in the environment and regional integration was delivered by the IDB representative.

The Private Sector and the Environment

The Bank has long recognized that increasing the volume of direct financing in environmentally sustainable development is not the sole solution to environmental problems. It also recognizes that international financing is best seen as a catalyst for change. The Bank is assisting the countries to redirect attention to secure sustainable financial resources for sustainable development. This is at the core of more effective financing both from an economic and a social perspective. The private sector can contribute very significantly through technology transfers, human development and investment. The large and increasing foreign investment clearly suggests an enormous potential for private resource mobilization. Moreover, if increased environmental concern on the part of business is matched by government policies that create profit opportunities in environmental protection, increased investment in environmentally friendly projects and adoption of new technologies originated in the industrial countries would be encouraged.

At the Twenty-Fifth Annual Spring Conference on the Environment held in Warrenton, Virginia on May 10 - 11, President Iglesias outlined the Bank's vision regarding the role of the private sector in financing environmentally sustainable development in Latin America and the Caribbean. In October, the Yale Center for Environmental Law and Policy made a presentation at Bank headquarters on the results of their Private International Finance and the Environment project, including remarks on the sources of environmental content in these capital flows and the types of policy tools governments could use to improve the environmental benefits associated with investment flows.

Transportation and the Envir onment

The Environmental Assessment (EA) Guidelines for the Transportation Sector, which are intended to assist process managers in the transportation sector to perform the environmental due diligence of infrastructure projects, have been completed and reviewed. The review process included a workshop held at the Bank in April with the participation of World Bank specialists, regional environmental advisors and representatives from the regional departments. The new guidelines were also pre-

sented at two international workshops coordinated with the World Bank. A workshop in Pereira (Colombia) in July included the participation of representatives from many of the environmental units established with IDB and World Bank assistance within the Ministries of Transportation and Public Works across the region. The topic of a workshop held in Caracas (Venezuela) in December, was the environmental implications of infrastructure projects in the Amazon basin. The debate ranged from interoceanic corridors to waterways to multimodal transportation systems. At both meetings the guidelines were presented and very well received by field practitioners and transportation specialists charged with the management of the environmental review process.

The Paraná-Paraguay Waterway (Hidrovía)

The engineering, economic and environmental studies for the Paraguay-Paraná Waterway (Hidrovía) should be completed by the end of 1996. During the year, the IDB assisted the Intergovernmental Committee for the Hidrovía (CIH) in the implementation of an information dissemination and public participation process. With assistance from the Norway Trust Fund, a team of specialists from the region helped the CIH to set up the Hidrovía home page on the Internet; disseminate a newsletter detailing progress made on the studies; establish a network of groups, organizations and academic institutions throughout the region interested in the Hidrovía project; and assisted in the organization of public hearings in Asunción, Buenos Aires and Campo Grande (Brazil). The latter meeting, coordinated with numerous NGOs and indigenous peoples from the region, has been the most successful public participation meeting to date and is likely to set the stage for future consultations and community participation in the decision-making process.

In April, the Bank participated in a seminar held at the Harvard University Center for Latin American Studies, where high-level representatives of governments and academic institutions from the region debated the concept of the Hidrovía within the larger context of the sustainable development of the Plata River basin. Information management systems based on hydrological and meteorological data bases supported by state-of-the-art remote sensing technology, navigational aids and monitoring stations along the river were analyzed as low cost and low impact alternatives to traditional engineering solutions to river navigation. The meeting offered a unique glance at the change in attitudes within the political establishment with regard to the waterway project, which resulted from the open debate and worldwide attention to the environmental and sustainable development implications of this type of infrastructure project in the region. The frank and open discussion about similar waterway development projects in Europe and North America concluded that river navigation should adapt to the river, instead of changing the river's natural flow to adapt to navigation.

Finally, the subject of the Hidrovía studies and the Bank's activities within the Amazon region were the subject of a series of meetings of European environmental NGOs with a Bank mission which included representatives from headquarters, the country office in Brazil and the Bank's special office in Europe. The mission rekindled the interest of many NGOs in Europe to network and cooperate with the IDB in its environmental activities in Latin America and the Caribbean. It also met in Brussels with officials from the environment division of the European Commission to discuss issues of common concern and areas of potential cooperation.

The Environment and Business Opportunities

During 1996, consulting firms specializing in the environment continued to show great interest in the activities of the IDB. The Bank's Environment Division has supported the Office of External Relations and the Executive Directors Office at a number of meetings held for the purpose of explaining the Bank's environmental procedures, nature of the project pipeline and business opportunities with the IDB. Business briefings were held periodically in Washington. Briefings for environmental firms were also held in other cities including Toronto, Orlando and Fort Lauderdale.

Environmental Film Festival

During this year's Environmental Film Festival, the Bank hosted the presentation of three videos. The first was a documentary on the life, culture and natural habitat of the Kuna peoples of Panama. The second detailed the successful implementation of a turtle conservation program with community participation in the state of Bahia in Brazil. The third was a short documentary about the possible effects of the Hidrovía on the Pantanal (the world's largest wetland), its spectacular scenery, its rich natural and cultural heritage, and its potential for ecotourism, fisheries and high-value cattle ranching.

First and Second Regional Conferences on the Desertification Convention

Participants from the United Nations Development Program, the Economic Commission for Latin America and the Caribbean, the United Nations Environment Program and the Food and Agriculture Administration attended both conferences. Achievements include the dissemination of principles and mandates of the Convention in six Latin American Countries: Argentina, Bolivia, Brazil, Ecuador, Chile and Peru.

LIST OF SELECTED MEETINGS AND EVENTS

- *Primera Conferencia Regional de América Latina y el Caribe sobre la Convención de Lucha contra la Desertificación*, Argentina, January 24–26
- *Water Resource Management Strategy for Ecuador,* January 28–29.
- *Regulation Organization and Incentives: The Political Economy of Potable Water Supply*, January 31–February 1.
- *Pollution Control Management,* sponsored by the Inter-American Development Bank, March 25.
- *European Union and Latin American Countries: Partners in Energy*, Caracas, April.
- *Regional Fund for Agricultural Technology: Special Meeting during Annual IDB Governors Meeting,* Buenos Aires, Argentina, March 26.
- *Paraná-Paraguay Hidrovía Conference. Harvard University* sponsored by the D. Rockefeller Center for Latin American Studies, Cambridge, MA, April 3–4.
- *Forum Las Americas. The IDB's New Orientation Toward the Environment*, sponsored by the IDB, April 9.
- IBAMA-AMANAKA A-NWF. *Brazilian Institute for the Environment and Renewable Natural Resources-Amanakaa Amazon Network,* sponsored by the IDB, April 10.
- *The Second Inter-American Conference of Mayors*, sponsored by the IDB, April 16–19.
- *Second Meeting of the Steering Committee of the Hemispheric Energy Symposium*. Rio de Janeiro, Brazil, April 29–30.
- *Workshop on Strategies for Integrated Water Resources Management (RTC)*, San José, Costa Rica, May 6–7.
- *IDB/WMO LAC Water Resource Conference,* San José, Costa Rica, May 8–11.
- *5th MFI Environmental Sub-Group Meeting,* Helsinki, Finland, May 2–4.
- *25th Annual Spring Conference on the Environment. American Bar Association. "Sustainable Development in the Americas: The Emerging Role of the Private Sector,"* Warrenton, VA, May 10–11.
- *Meeting of the Technical Organizing Committee for the Santa Cruz Summit*, Santa Cruz, Bolivia, May 12–15.
- *1996 Environmental Film Festival in the Nation's Capital*, IDB, May 13 and 15.
- *8th International Coral Reef Congress*, Panama City, Panama, May 23–29.
- *Preparatory Meeting of the Technical Group*, Bolivia Summit, Santa Cruz, Bolivia, May.
- *Meeting of the Regional Fund for Agricultural Technology*, San Pedro Sula, Honduras, June 5.
- *Rural Development Workshop*, IDB Headquarters, June 24.
- *International Association for Impact Assessment. IAIA's 96.* Estoril, Portugal, June 17–23.
- *Second Meeting of NGOs on the Paraná-Paraguay Hidrovía,* Asunción, Paraguay, June 22.
- *Regional Fund for Agriculture Technology, First Meeting of the Board of Directors*, Cartagena, Colombia, July 2–3.
- *Regional Workshop on Environment in the Transportation Sector: A Gathering of Environmental Units in the Transportation Sector of LAC*, sponsored by WB/IDB, Pereira, Colombia, July.
- *International Meeting of the OAS Consultative Group on Water for the 1996 Summit on Sustainable Development*, Washington D.C., July 18–19.
- *LAC Energy Ministers' Meeting*, Santa Cruz de la Sierra, Bolivia, July 30–August 1.
- *Consultative Group on International Agricultural Research*. Washington D.C., October 28–31.
- *Workshop on Biodiversity Financing: The Role of the IDB*. IDB, Washington D.C., October 28.
- *Partnership for Pollution Prevention*. OAS, Washington D.C., November 4.
- *Reunión Anual de Consorcio para el Desarrollo Sostenible de la Ecoregión Andina,* Quito, Ecuador, November 5–7.
- *Regional Fund for Agriculture Technology, First Meeting to Prepare Medium-Term Plan.* Bogota, Colombia, November 14–15.
- *Hearing on Forestry Policies in Latin America. World Commission on Forests and Sustainable Development*, San José, Costa Rica, December 2–3.
- *Urban Greening Workshop*. Mexico City, December 2–4.
- *Water Resources Seminar: Economic Instruments for Water Resource Management*, IDB, December 2.
- *Summit of the Americas on Sustainable Development*, Santa Cruz, Bolivia, December.

V. PUBLICATIONS

OF GENERAL INTEREST

In the third quarter of 1996, the Bank released Spanish and English language editions of the *Proceedings of the Sixth Consultative Meeting on the Environment*[1] that was held in Curitiba, Brazil, in November 1995. The proceedings focus on the urban environment for several reasons; more than 70% of the population of Latin America and the Caribbean lives in urban areas; cities have grown rapidly and often haphazardly in recent decades; environmental quality has deteriorated, as has the overall quality of life; and a high proportion of the urban poor face precarious conditions in terms of housing, sanitation, safety, social services, and basic services in general.

The document reflects the candid dialogue that took place among representatives of the Bank and nongovernmental organizations associated with the urban environment. They discussed alternatives and joint solutions to improve urban environmental management, with an emphasis on effective community participation strategies that would empower communities and local governments to work together to solve urban problems. The proceedings summarize the results of three plenary sessions (on urban planning and the environment, participation in urban environmental management, and the relationship between the Bank and NGOs associated with the urban environment) and contain the full text of eleven working papers on specific topics presented at the event.

For the historic meeting of the heads of state at the Summit Conference on Sustainable Development in Santa Cruz de la Sierra, Bolivia, the Bank prepared *Investing in a Sustainable Future*[2] to inform the participants about the IDB's present and future efforts that respond to the call of the Santa Cruz Summit to international organizations in support of its Declaration. The document covers the Bank's strategic areas of action under its sustainable development mandate, including human capital formation, rural poverty and sustainable agriculture, integrated natural resource management and the environment, urban economic development and economic and financial modernization. Key issues and proposed Bank responses are set out in several specific subareas under these five broad categories.

PUBLICATIONS OF OTHER ENTITIES UNDERTAKEN WITH IDB FINANCIAL SUPPORT

The Bank, with the United Nations Development Program and the Andean Development Corporation, sponsored the publication of *Dawn in the Andes*[3], a book written by a group of experts under the auspices of the Latin American and Caribbean Commission on Development and the Environment. The book takes a wide-ranging look at the natural and cultural heritage of this heterogenous region situated along the Andean mountain range whose influence, both direct and indirect, affects the ecological, social and economic well-being of the entire continent of South America. Principles for a sustainable development strategy of the Andean region are proposed to meet present and future challenges in political economy, sustainable natural resource management and use, urban development, and cultural diversity.

The World Meteorological Organization, in association with the IDB, convened a regional conference in San José, Costa Rica in May 1996 to address water resources issues and to formulate strategies and action programs.

[1] Available in Spanish and English.

[2] Available in Spanish and English.

[3] Available in Spanish. English version forthcoming in 1997.

The conference was designed to explore strategies which would ensure that national water resources agencies play a full part in national and regional development in Latin America and the Caribbean. The first part of the conference involved two parallel workshops—the WMO workshop on national perspectives in water resources assessment, and the IDB workshop on water management strategies. The *Report of the Conference on Water Resources Assessment and Management Strategies in Latin America and the Caribbean* was published by WMO in June. It contains the San José declaration, a statement compiled by the participants, a summary report on the conference, and an action plan. The *Proceedings*, containing conference and workshop papers in their entirety, was published as a separate volume, also in June.[4]

ARTICLES BY IDB STAFF APPEARING IN JOURNALS OR PRESENTED AT PROFESSIONAL MEETINGS

Sergio Ardila, an IDB economist, presented the paper *Soil Conservation Investments: A Two-Stage Dynamic Optimization Model* at the meetings of the Latin American Econometric Society. The paper develops an optimization model of investments in soil conservation, where these expenses are not seen as mere input changes as in traditional soil conservation models. The model is a combination of: i) an infinite horizon optimal control model that considers soil as the stock variable and agricultural production as a soil depleting activity, and ii) a simple static optimization model to determine the optimal amount of investment in soil conservation, represented as a change in soil slope. All the comparative dynamics properties of the optimal control model are developed, as well as the comparative statics of the steady state. Based on these results, the comparative statics properties of the investment decision are derived to uncover the effects of changes in output prices, input prices, the discount rate and basic physical parameters of the model. Policy implications and possible extensions of this work are suggested.

Marc Dourojeanni, environmental advisor in the Bank's Brazil country office, proposed the innovative idea of "nature condominiums" in "Condominio natural: Una nueva estrategia para establecer reservas naturales privadas," an article appearing in the Peru's *Medio Ambiente* 11(68). The goal is to encourage private investment in protecting forests by facilitating the private purchase of wildland through the intermediation of an international NGO, forming a condominium property management arrangement subject to a common management plan. The plan would recognize the right of individual owners to take limited advantage of their property, such as building a cabin for their own use, while maintaining most of it as a common wildland. The owners, as in any condominium, could sell or trade their property, provided that new owners respect the requirements of the management plan, which could be prepared and executed by, for example, a national or local NGO.

Marko Ehrlich, an environmental specialist in the Environment Division of the IDB, has followed the Paraguay-Paraná waterway development studies since 1992. Ehrlich's article "The Hidrovía Paraguay-Paraná. The Role of the IDB: Consistency and Evolution" appears in *Hidrovía: Bright Future or Development Nightmare?*, proceedings of an international conference sponsored by Harvard University's David Rockefeller Center for Latin American Studies. In the article, Mr. Ehrlich reviews the history of the waterway development project from the Bank's perspective, describes lessons learned and suggests a series of collective actions that would ensure the long-term viability of this regional development effort. The article's conclusions stress consultation and public participation as integral components of a dynamic planning strategy. To enhance resource allocation and more efficiently generate and disseminate research information on the ecology, sociology, economy and sustainable development options of the Rio de la Plata basin, Mr. Ehrlich also highlights the importance of using hydrometeorological information management systems and remote sensing as alternative mechanisms to achieve improvements in river navigation, and regional cooperation and coordination. In the end, the integrated and long-term attention that is paid to the development potential of the region should go a long way in justifying the Hidrovía Paraguay-Paraná not merely as an infrastructure project, but as regionally coordinated and participatory process to achieve sustainable development in the MERCOSUR region.

The work of IDB economists Mario Niklitschek and Javier León on "Combining Intended Demand and Yes/No Responses in the Estimation of Contingent Valuation Models" was published in volume 31 of the *Journal of Environmental Economics and Management*. Niklitschek and León show how to obtain an estimate of the total value of rehabilitating a recreational resource by combining hypothetical market and observed direct recreational use information, and demonstrate the approach by estimating an econometric model from survey data on value and use of ocean and bay beaches in a major metropolitan area in Latin America. Their technique allows use and non-use values to be distinguished. The integrated econometric model can be evaluated to compute the effects of a beach carrying capacity constraint in terms of the equilibrium entry fee it implies, the reduction in household benefits it imposes, and the potential revenue that can be collected under a

[4] Both *Report* and *Proceedings* available in Spanish and English.

fee regime rather than unrestricted access.

Ricardo Quiroga, a natural resource economist with the IDB, co-authored two articles. The first, with B. E. Bravo-Ureta, and J. Brea titled "Migration Decisions, Agrarian Structure and Gender: The Case of Ecuador" appeared in the *Journal of Developing Areas*, 11 (1996). A migration model is estimated, from a combination of aggregate and individual level data, and is used to test several hypotheses concerning the determinants of migration in Ecuador. Land reform is found to have a significant effect in reducing migration rates, while population pressure has the opposite effect. Also, the results reveal significant differences in the determinants of labor mobility for males and females. The analysis confirms Todaro's hypothesis that the probability of migrating is directly associated with expected income at the place of destination for males. This hypothesis, however, is not supported for females. Education is found to have a positive impact on the probability of migrating for both females and males. In addition, quality of life differentials, such as literacy rates and levels of urbanization, have a positive effect on the individual's decision to move.

Quiroga and B. E. Bravo-Ureta also wrote "The Choice of Flexible Functional Forms in Dual Profit Models" for *Investigación Agraria: Economía*, 11 (1996). The performance of the normalized quadratic, generalized Leontief, and translog functional forms for a dual short-run profit model are evaluated using farm level data from Vermont. The results show that the normalized quadratic function outperforms the other two functional forms in terms of satisfying regularity conditions of the profit function. Tests on the structure of farm technology indicate that non-neutral technological change occurred in the industry. Non-jointness is rejected in the normalized quadratic and generalized Leontief models, but not in the translog specification at the point of approximation. In addition, input-output separability is rejected using the translog functional form. In general, elasticities estimated using the normalized quadratic model predicted changes in output and input demand functions that conform with *a priori* expectations based on theory. This is not the case under the translog and generalized Leontief specifications.

A SAMPLING OF TECHNICAL PAPERS AND GUIDELINES PRODUCED BY THE ENVIRONMENT DIVISION OF SDS

In *Policy Instruments and Financing Mechanisms for the Sustainable Use of Forests in Latin America*,[5] Professor Ramón López of the University of Maryland analyzes the role of international and domestic policies on sustainable forest use, and examines potential financing mechanisms to promote sustainable forest development and a more efficient wood industry. A clear distinction is made between global (e.g. carbon sequestration and biodiversity preservation) and national interests. The potential net carbon sequestration benefits accruing to the world by protecting a large portion of the remaining tropical forests in Latin America (for example, 650 million hectares) are estimated to be about $70 billion per year, or approximately 0.2% of world GNP. But without international grant support, forest preservation goals must be more modest, and the focus will shift to deciding how to generate the highest returns in developing the vast forest areas that will be designated for agroforestry, timber extraction, and conversion to agriculture, while controlling negative environmental losses.

Walter Jaffé Carbonell and Diógenes Infante, in *Opportunities and Challenges in Biotechnology for Agriculture and Agroindustry in Latin America and the Caribbean*,[6] review the development of agricultural biotechnology in the region, assess the scientific capacity to undertake biotechnology research and development, characterize the biotechnology industry, and analyze the strategy, policy and institutional framework which influences the pace and nature of technology development and adoption. The authors conclude with suggestions for formation of human capital, better dissemination to the productive sector, a clearer articulation of opportunities and the economic, technical and market hurdles to more effective adoption, and better coordinated, less atomized initiatives that are more responsive to the needs of the users of biotechnology.

Agriculture in Latin America faces serious problems of soil and water degradation, deforestation, overgrazing, genetic loss and indiscriminate agrochemical use, observes David Kaimowitz in *Research in Latin America on Natural Resources Management for Productive Ends*.[7] The author reviews the state of research to overcome those problems, and draws lessons from experience, including production systems research, integrated rural development projects, and case studies on natural resource management research from El Salvador, Colombia and Argentina. In general, the current policy framework in Latin America does not encourage the adoption of agricultural technologies and practices that enhance natural resource management, despite some improvements in the structure of relative prices and property regimes. Some success has been achieved in conservation tillage, the use of biological agents, rapid growth tree plantations, and labor and fuel saving practices in large scale agriculture. But, to achieve a real impact on developing and disseminating technological practices that are more compatible with natural resource management will require a better elucidation of priorities, an increase in the propor-

[5] Available only in English.
[6,7] Available only in Spanish.

tion of research funds for natural resource management research rather than more traditional lines, improved interinstitutional networking and coordination, and a more participatory role in research for the intended beneficiaries, the growers.

Most national agricultural research systems in the region are experiencing serious budget shortages at the same time that additional demands are being added to the research agenda, such as natural resource management and rural poverty. A collaborative effort among experts in the IDB (Ruben Echeverría), Fundación ArgenINTA (Eduardo Trigo), and the World Bank (Derek Byerlee) reports on findings from a workshop on *Institutional Change and Effective Financing of Agricultural Research in Latin America*.[8] The paper reviews recent institutional change and innovative mechanisms for funding agricultural research in Latin America, including commercialization of research results through joint public-private sector ventures, competitive funds, research foundations, farmer-managed levies on agricultural production, and greater involvement of universities and private agribusinesses. However, while these mechanisms are helping to alleviate chronic underfunding of national agricultural research systems, the public sector is still the main contributor. More public funding will be needed to address new demands on the research system and fill a growing gap in the maintenance and investment of both physical and human capital for research. Reforms in the traditional national research institute model are needed to make it attractive for governments, farmers and the private sector to invest in agricultural research.

Clifford S. Russell and Philip T. Powell, in *Choosing Environmental Policy Tools,* evaluate the relative merits of the several types of policy instruments that can be employed to achieve pollution reduction targets for air, land, and water. The economic literature often refers to two classes of instruments: economic incentives, and so-called "command and control" policies. Russell and Powell show why economic incentives, such as administered prices (emission charges) or administered markets (tradeable permits), are not necessarily preferable under all situations. Because of physical and institutional realities, some economic instruments for pollution control are less useful in developing than in industrialized countries. In addition, their utility may be generally confined to those settings in developing countries that are already developed because many economic instruments, such as effluent charges or tradeable emission permits, require sophisticated and costly design, monitoring, and enforcement efforts. Thus, the relative desirability of choices from this particular instrument menu will be determined by many factors, only one of which will be the potential desirability of leaving choices to the regulated parties themselves.

While the role of nongovernmental organizations in environmental policy is growing rapidly, our analytical understanding of the causes and consequences of this emerging role has not kept pace. Professor Tom Tietenberg, in *Private Enforcement of Environmental Regulations in Latin America and the Caribbean*, explores one facet of the participation of nongovernmental organizations in environmental policy—private enforcement—and develops a practical set of recommendations on whether and how to incorporate private enforcement in Bank projects and programs. The economic models in the paper show how the varying remedies, limitations, and reimbursement procedures can affect both the level and patterns of private enforcement activity as well as the environmental and economic consequences. The arguments are illustrated with case study examples from Latin America and the Caribbean prepared by a group of attorneys in the region.

ENVIRONMENT DIVISION PUBLICATIONS

Ramón López. *Policy Instruments and Financing Mechanisms for the Sustainable Use of Forests in Latin America*. 12/96. (Nº ENV-106)

W. Jaffé Carbonell and D. Infante. *Oportunidades y desafíos de la biotecnología para la agricultura y la agroindustria de América Latina y el Caribe*. 9/96. (Nº ENV-105)

David Kaimowitz. *La investigación sobre manejo de recursos naturales renovables para fines productivos en América Latina*. 9/96. (Nº ENV-104)

R. G. Echeverría, E. J. Trigo and D. Byerlee. *Cambio institucional y alternativas de financiación de la investigación agropecuaria*. 8/96. (Nº ENV-103)

C. S. Russell and P. T. Powell. *Choosing Environmental Policy Tools: Theoretical Cautions and Practical Considerations*. 6/96. (Nº ENV-102)

Tom Tietenberg. *Private Enforcement of Environmental Regulations in Latin America and the Caribbean: An Effective Instrument for Environmental Management?* 5/96. (Nº ENV-101)

Jan G. Laarman. *Government Policies Affecting Forests in Latin America: An Agenda for Discussion*. 1995.

[8] The Spanish language version, *Cambio institutional y alternativas de financiación de la investigación agropecuaria en América Latina* is available from the Environment Division of the IDB. The English language version is available from the World Bank as Technical Paper No. 330.

Environment Committee. *Annual Report on the Environment and Natural Resources 1995.*

Working Papers

M. Sorensen with J. Smit and V. Barzetti. *Introduction to Urban Greening*. 11/96. No. ENV96-103.

M. Basterrechea, A. Dourojeanni, L. García, J. Novara and R. Rodríguez. *Lineamientos para la evaluación ambiental de proyectos de manejo de cuencas hidrográficas para eventual financiamiento del Banco Interamericano de Desarrollo*. 5/96.

M. Basterrechea, A. Dourojeanni, L. García, J. Novara and R. Rodríguez. *Lineamientos para la preparación de proyectos de manejo de cuencas hidrográficas para eventual financiamiento del Banco Interamericano de Desarrollo*. 4/96.

William B. Lord and Morris Israel (with Douglas Kenney). *A Proposed Strategy to Encourage and Facilitate Improved Water Resources Management in Latin America and the Caribbean*. 3/96.

Report of the Workshop on a Proposed Bank Strategy to Encourage and Facilitate Improved Water Resources Management in Latin America and The Caribbean. 3/96.

Meteorological and Hydrological Data for the Insurance Industry. Proceedings of a workshop sponsored by the World Meteorological Organization in cooperation with the IDB. 10/95

Luis E. García. *El contexto económico en la preparación de proyectos de manejo de cuencas*. 9/95.

Gil Nolet. *An Overview of International Environmental Conventions*. 4/95.

Darrell L. Hueth. *The Use of Subsidies to Achieve Efficient Resource Allocation in Upland Watersheds*. 3/95.

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Workshop on the Use of Financial Incentives for Industrial Forest Plantations. Proceedings. 1/95.

Anne Deruyttere. *The Indigenous Peoples Fund: An Innovative Mechanism in Support of the Ethnodevelopment of the Indigenous People of Latin America and the Caribbean.* 5/94.

Ramón López. *Financing Sustainability in Latin America and the Caribbean: Towards an Action Program*. 5/94.

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Marc J. Dourojeanni. *Some Thoughts on the Applicability of the Convention on Biodiversity in Latin America*. 2/94.

William J. Vaughan. *Sample Size for the Ex-Ante Economic Evaluation of Multiple Works Programs*. 1/94.

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Sergio Ardila. *Guía para la utilización de modelos econométricos en aplicaciones del método de valoración contingente*. 12/93.

William J. Vaughan and Sergio Ardila. *Economic Analysis of the Environmental Aspects of Investment Projects*. 12/93.

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