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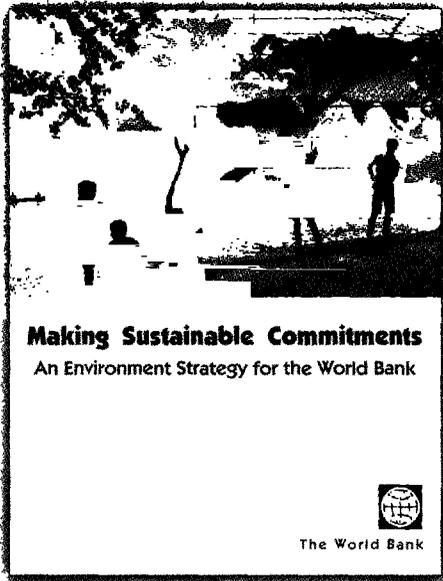
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environment action plan

THE WORLD BANK

23955
2001

MAKING SUSTAINABLE COMMITMENTS



An Environment Strategy for the World Bank

In many developing countries, the costs of environmental degradation have been estimated at 4 to 8 percent of GDP annually. Natural resources degradation—depleted soils, insufficient water, rapidly disappearing forests, collapsed fisheries—threaten the quality of life of millions of people. Environment problems also threaten the health of millions; an estimated 6 million people die annually, and many more get sick, in developing countries from water-related diseases, indoor air pollution, urban air pollution, and exposure to toxic chemicals. Environmental degradation also increases the vulnerability of people to natural disasters. The impact of environmental degradation threatens the basis for growth and livelihoods today and in the future. Environmental degradation also reaches across borders, affecting the quality of the regional and global commons. The Environment Strategy is responding to these challenges.

This Environment Strategy outlines how the World Bank will work with client countries to address their environmental challenges and ensure that Bank projects and programs integrate principles of environmental sustainability. The Strategy sets a vision, objectives, and a course of action for the longer term and suggests specific actions, targets, and institutional measures for the next five years, as described in Tables 1 and 2 of the Executive Summary. The Strategy is the product of a multi-year effort, including an extensive evaluation of the Bank's past performance, and numerous workshops and consultations with client government, civil society, academia, multilateral and bilateral development agencies, and representatives of the private sector.

Environmental Priorities for a New Millennium

Over the last two decades, the Chinese government has made significant inroads in battling a range of environmental problems—including air pollution, water pollution, and deforestation. Yet environmental challenges are likely to be far greater and more complex over the next 10 years, which will require a significant change in development strategy. This is the main finding of a new World Bank report entitled *China, Air, Land, and Water — Environmental Priorities for a New Millennium*, which was released in August 2001.

The report was prepared by a World Bank team and assisted by technical specialists from 10 Chinese research institutes, universities, and NGOs. It reviews the state of China's environment, assesses the effectiveness of the government's environmental protection work over the last 10 years, and makes recommendations on how to address the new challenges that will face the country over the next decade. The report points to three areas of success: broad-based and absolute reduction in industrial air and water pollutant emissions during the second half of the 1990s; the reversal of deforestation through massive investments in reforestation and afforestation; and the reversal of secondary salinization in irrigation areas through major programs of both control and prevention.

Overall, the report urges that China's environmental strategy needs to become more proactive. The current approach focuses mainly on remedying the adverse environmental effects of previous development decisions. In the future, more emphasis should be placed on avoiding or minimizing the adverse environmental effects of development policy in the first place.

Written for a broad audience, this book will be of interest to all those concerned about environmental quality in Asia. A CD-ROM, which is included in the book, provides background research and additional technical detail.

CHINA — AIR, LAND, AND WATER



letter from the

Environmentally and Socially Sustainable Development



Welcome to the 2001 edition of *Environment Matters*, which reviews the World Bank's current environmental activities and describes the challenges ahead.

We have a very real chance of reducing world poverty, and doing so in a manner consistent with a clear social and environmental conscience. But it takes actions across all communities of the world—from a small farmers' organization to a large private multinational corporation to the western governments of the world.

The international development community is now reaching a consensus on the critical development goals facing the world on several fronts, and in every case environmental issues are a large part of the agenda. Particularly significant is an effort by the international development agencies to draft a common set of development goals; and important for the Bank is the new World Bank Environment Strategy. In both of these initiatives, there is a redoubled effort to strengthen the linkages between environment and poverty reduction goals.

The leaders of the major international development institutions—including the United Nations, Organisation for Economic Co-operation and Development, International Monetary Fund, and the Bank—are working to develop a common set of international development goals. The discussions in progress focus on integrating the international development goals agreed to by these four institutions with the UN's Millennium Development Goals. Ensuring environmental sustainability is one of the seven agreed goals.

The challenge ahead is to convert these goals into real progress on the ground. Environmental health risks still cause nearly 20 percent of the burden of disease in developing countries; natural resources are under great pressure; and natural and man-induced disasters continue to cost billions of dollars and countless personal tragedies around the world.

To help make these goals a reality, the World Bank's Environment Department has completed *Making Sustainable Commitments*, the Bank's new Environment Strategy. For the first time, the Bank has consolidated its approach to environmental protection into a single document. The strategy will ensure economic growth does not come at the expense of people's health and future opportunities because of pollution and degraded natural resources and ecosystems. We have strived to integrate environment into the development agenda of the Bank because sustainability is at the heart of development.

The Environment Strategy, which is the primary focus of this issue of *Environment Matters*, builds upon ongoing efforts and programs. It considers lessons from the past, responds to a changing Bank and a changing global context, and deepens our commitment to sustainable development. The new elements of the Strategy include a strengthened emphasis on poverty-environment linkages and local environmental concerns; an increased focus on tools that help integrate environment into sectoral programs and policies; and efforts to improve institutional incentives to mainstream sustainability in projects.

The Strategy poses many new challenges for the way the Bank conducts its business. It stresses the need to strengthen accountability and incentives; coordinate across sectors; improve the skills mix; adjust budgets to reflect corporate priorities; realign partnerships to effectively leverage scarce Bank resources; and monitor progress to track the implementation of the Strategy and the Bank's performance.

In short, the international development community has set a clear direction for the future. Collective community action is needed, and the World Bank will play its part. In the coming decades, we must find better ways to bring together governments, the private sector, NGOs, local communities, and civil society to end poverty and build a sustainable world for our children and grandchildren.

Ian Johnson

Environment Matters is a magazine of the World Bank Group. Also visit the magazine at the Bank's website — <http://www.worldbank.org/>

Welcome to Environment matters...

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All \$ = U.S. dollars

Image on page 6 from Bhutan

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The World Bank Group
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Founded in 1944, the World Bank Group consists of five closely associated institutions. Our mission is to fight poverty for lasting results and to help people help themselves and their environment by providing resources, sharing knowledge, building capacity, and forging partnerships in the public and private sectors.

The World Bank Group is owned by 183 member countries who are represented by a Board of Governors and a Washington-based Board of Directors. Member countries are shareholders who carry ultimate decisionmaking power in the World Bank.

Headquartered in Washington, D.C., the Bank operates in 100 country offices and has approximately 10,600 employees. James D. Wolfensohn is president of the five institutions.

The World Bank Group is the world's largest source of development assistance. In fiscal 2000, the institution provided more than \$15 billion in loans to its client countries. It works in more than 100 developing economies, with the primary focus of helping the poorest people and the poorest countries. For all its clients, the Bank emphasizes the need for:

- Investing in people, particularly through basic health and education
- Focusing on social development, inclusion, governance, and institution-building as key elements of poverty reduction
- Strengthening the ability of governments to deliver quality services efficiently and transparently
- Protecting the environment
- Supporting and encouraging private business development
- Promoting reforms to create a stable macroeconomic environment that is conducive to investment and long-term planning.

The Bank is organized in regions as follows:

AFR—Sub-Saharan Africa
 EAP—East Asia and the Pacific
 ECA—Europe and Central Asia
 LCR—Latin America and the Caribbean
 MNA—Middle East and North Africa
 SAR—South Asia

The World Bank Group				
The World Bank		IFC	MIGA	ICSID
IBRD	IDA			
International Bank for Reconstruction and Development	International Development Association	International Finance Corporation	Multilateral Investment Guarantee Agency	International Centre for Settlement of Investment Disputes
Est'd 1945 183 countries; 163 countries contribute to its capital	Est'd 1960 161 members	Est'd 1956 174 countries	Est'd 1988 154 members	Est'd 1966 113 members
Lends to assist with borrowing countries based on high credit ratings of economic returns	Lends to assist eligible developing countries with a per capita GNP of less than \$885	Assists economic development by promoting growth in the private sector	Assists economic development through loan guarantees to foreign investors	Provides facilities for the resolution and arbitration of disputes between member countries and investment companies and for the quality assurance of other member countries

About the Cover:

The crested wood partridge *Rallulus rufirostris* is a common resident of lowland rain forests in Sumatra and Borneo. These are now some of the most threatened forests on Earth—it has been estimated that at present rates of clearance for agriculture and logging, all lowland forests in Sumatra will be cleared by 2005 and those in Kalimantan (Indonesian Borneo) will have vanished by 2010. The undisturbed rainforests have been vanishing at the rate of 1.5 million hectares a year over the last 12 years. The partridge occurs within the Kerinci national park and adjacent forests, the site of a Bank/GEF integrated conservation and development project, which is strengthening park management and working with local communities and forest concessions to maintain a permanent forest estate across a range of habitats from lowland forests to the peak of Sumatra's highest mountain, Gunung Kerinci.



This year the crested wood partridge was chosen as the symbol for the June Environment Events at the World Bank to symbolize the linkages between healthy ecosystems, biodiversity conservation, and sustainable development.

Photo: J. & K. MacKinnon

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2001



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Johannesburg 2002

MUST BE ABOUT PEOPLE, PLANET, AND PROSPERITY

VIEWPOINT by Mohammed Valli Moosa,
Minister of Environmental Affairs and Tourism, South Africa

Where do we come from

Next year in Johannesburg, world leaders will re-visit the historic issues raised at the 1992 Rio Earth Summit: sustainable development and the protection of the environment as one element of sustainable development.

In the preamble to the 1992 Earth Summit, the context of the world's development constraints was embodied in the interaction among the economy, social structures, and the environment. This context has not changed. We still live in a world where the disparity between rich and poor constantly increases. As custodians for future generations, we must ensure a safer, more prosperous future in which we deal with environment and development issues in a balanced manner.

In 1992, Heads of State and senior government officials of 178 countries got together to chart the road ahead for a global partnership that would ensure that all nations would have a safer and more prosperous future. This partnership included the development of Agenda 21; a statement on the management, conservation, and sustainable development of all forests; and formulation of the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity.

The world departed from Rio with Agenda 21 as a mandate for sustainable development. The underlying message of that mandate was simple—without better care of the environment, development will be undermined; and without accelerated economic and social development of poor countries, environmental policies will fail.

The vision for Johannesburg 2002

In September 2002, we shall gather in Johannesburg for a ten-year review of the historic 1992 meeting. The 2002 United Nations World Summit on Sustainable Development (WSSD) should focus on the identification of accomplishments and areas where further efforts are needed to implement Agenda 21 and other outcomes from Rio. This summit must focus on action-oriented decisions to implement Agenda 21. The Johannesburg meeting is an opportunity to find renewed political commitment and support for sustainable development.

A central issue is to ensure a balance between economic development, social development, and environmental protection as independent and mutually reinforcing components of sustainable development.

This Summit should be based on a constructive partnership between the developed and the developing world, which recognizes our common but differentiated responsibilities for working toward sustainable development. It must clearly address the international challenges to the creation of an enabling environment.

How sustainable is a world that promotes strident and unabated development in some parts of the world, yet perpetuates, and even exacerbates, underdevelopment, poverty, and disease in other parts of the world?

It should deepen the global commitment to sustainable development through a new "global compact," and bring a new spirit into the environmental debate. Fortunately there is an emerging consensus that the primary focus of the Summit should be on "poverty, development, and the environment."

Some of the themes that are already emerging include the interlinkages among poverty, environment, and development; financing mechanisms; technology transfer; trade and the environment; water; energy; environmental health; and land

degradation. These issues are key to the developing world and paramount for the strengthening of the broad statements declared in 1992.

VIEWPOINT

What Africa expects from Johannesburg

At Johannesburg, the world consensus on the real and practical meaning of sustainable development must take a quantum leap forward. Shall we dare to ask the question: How sustainable is a world that promotes strident and unabated development in some parts of the world, yet perpetuates, and even exacerbates, underdevelopment, poverty, and disease in other parts of the world?

At the recent session of the Governing Council of the United Nations Environment Programme in Nairobi, elements emerged that could guide discussions on governance and institutional arrangements, including defining workable institutional arrangements; addressing finances, including looking into the decisionmaking of international financial institutions; and instituting a system that empowers small and developing countries to participate meaningfully.

The Johannesburg Summit must not shirk the responsibility of critically assessing our successes and failures in implementing the Rio decisions. There is still time to complete unfulfilled tasks. The time between now and the 2002 Earth Summit is valuable time. Johannesburg must be more than just about looking back.

The WSSD and Africa

The people of Africa, and indeed the world, will look upon this great gathering of world leaders and want them to chart a path forward with courage and determination. Such a path must provide hope:

- To the millions who suffer from waterborne diseases
- To the children who suffer as a result of underdevelopment
- To the women whose emancipation will continue to elude us as long as they carry the burden of daily scavenging for sources of energy and clean water.

The Summit must have prominently on its agenda questions of health, water, energy, and a better life for children and the emancipation of women.



The impact of the loss of biodiversity on the poor, particularly as it relates to the invasion of exotic species and destruction of sources of food in the lakes of Africa, must be addressed.

We are talking about the intersection between environment, poverty, and development. This intersection constitutes the core subject matter of the Summit.

There has been much discussion over the past years on the question of environmental governance. We will be cowards if our discourse on this matter is half measured and fails to ad-

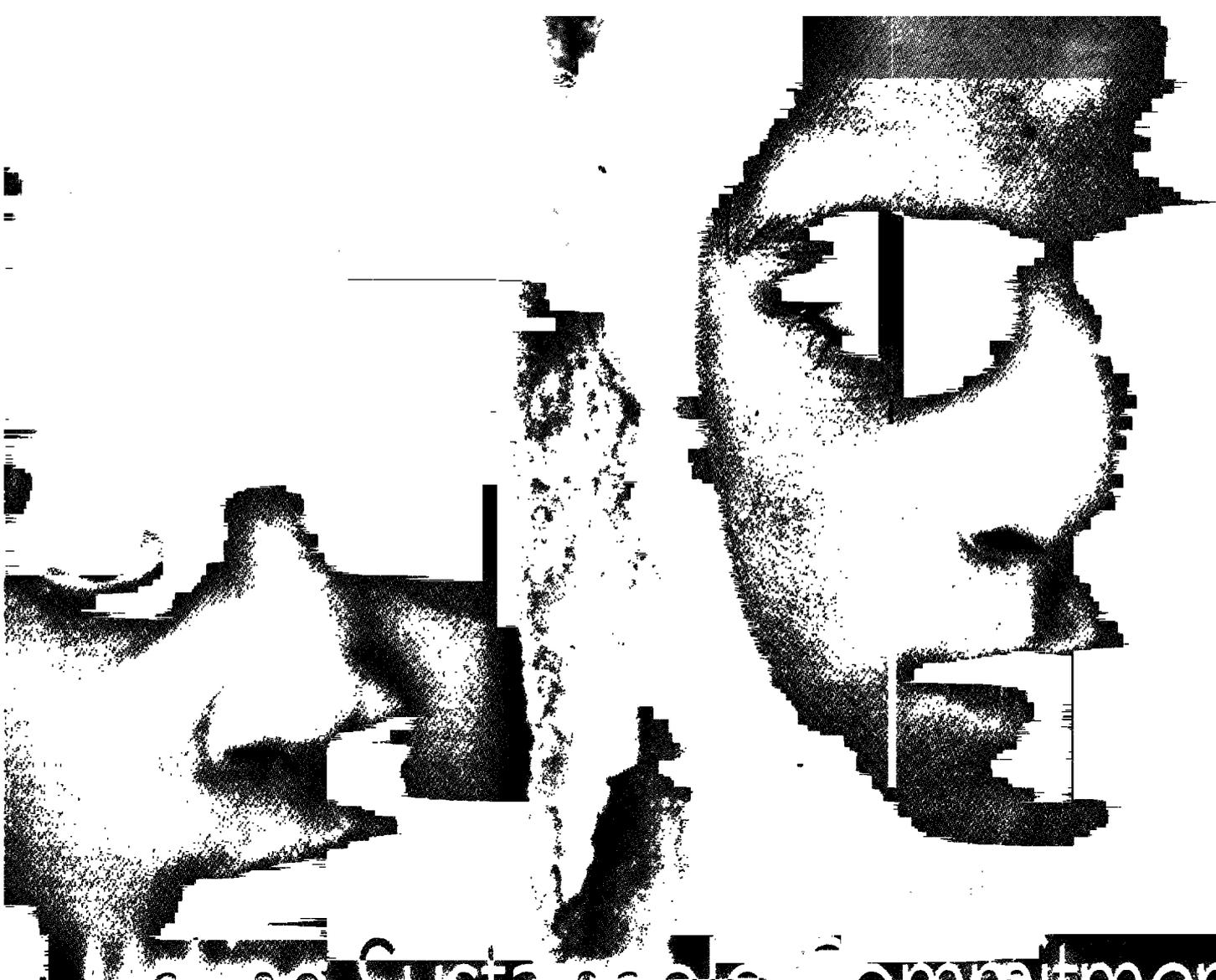
dress the real issues. The noble decisions of Rio, and those that emerge from Johannesburg, will be unfulfilled without workable and democratic institutional arrangements to effect implementation.

We need to develop a new system that can empower small and developing countries to participate meaningfully in matters of environmental governance. The present proliferation of structures, agreements, programs, and conferences simply results in an inadequate participation on the part of developing countries. The dispersed and fragmented nature of the system makes it fundamentally undemocratic. To succeed in implementing the agenda for global change, environmental governance processes need to be transparent. There is a very small body of people in this world who really and truly understand all of these processes and the large variety of acronyms that go along with it.

There is no point in having wonderful arrangements without adequate finances and resources, and we need to get that right. Hopefully, we will tackle these issues before we get to Johannesburg. The journey to Johannesburg is as important as the Summit itself. Let us commit ourselves here to complete all that needs to be done in our own national preparatory processes, including popular mobilization for sustainable development. Without popular mobilization, we will not have sustainable development.

— Mohammed Valli Moosa

South African Government's Department of Environmental Affairs and Tourism, Private Bag X447, Pretoria 0001, South Africa. 012-310-3611, (fax) 012-322-0082. Website — <http://www.environment.gov.za/>



Making Sustainable Commitments

An Environment Strategy for the World Bank

by Kristalina I. Georgieva, *Director, Environment Department*

We live in a time of both astonishing progress and appalling destruction.

Economic development and the ability to connect around the globe have led to dramatic improvements in people's quality of life. New growth opportunities have produced gains unparalleled in human history. But these gains have been unevenly dis-

tributed. A large part of the world's population remains desperately poor, and we are often witness to devastation caused by man and nature.

Challenging times

We continue to struggle with environmental threats. Despite significant progress, many damaging environmental trends have not been fully arrested or reversed, thus jeopardizing the livelihoods and development prospects of billions. The statistics are familiar: 2 bil-

lion more people on the planet over the next quarter of a century; nearly two thirds of the world's population living in water-scarce or water-stressed areas by 2025; the need to double food production over the next 40 years at a time when almost 23 percent of the world's agricultural land has been degraded; the loss of more than 9 million hectares of forest a year, putting at risk more than 1.6 billion people who depend on forests for their livelihoods; the over-exploitation and decline of more than 60 percent of the world's marine fisheries—

threatening the livelihoods of fishermen, 95 percent of whom live in the developing world; and the possible disappearance of small island nations because of rising sea levels due to climate change.

Environmental degradation is of increasing concern to both citizens and governments in many of the World Bank's client countries. In some countries, annual losses of productivity and natural capital run as high as 4–8 percent of GDP. That is without the anticipated impacts of climate change, which threaten to undermine long-term development and the ability of hundreds of millions of people in the developing world to escape poverty. The Intergovernmental Panel on Climate Change estimates that the steady warming of the Earth's surface temperature will lead to falling agricultural production in tropical and sub-tropical countries, especially in Sub-Saharan Africa.

The combination of resource depletion and population growth places the sustainability of development at risk in a large number of the poorest countries. The "genuine" savings rate—the change in the total wealth of a country, factoring in natural, human, and produced capital—is negative in nearly 30 countries, while wealth per capita is declining in another 20. This implies that the asset base underpinning development is being eroded in these countries, with consequences for social welfare now and in the future.

Poor people are particularly under threat. One-and-a-half billion of them still do not have access to safe drinking water, nor to adequate sanitary facilities. This, along with air pollution and vector-borne diseases, is causing nearly 20 percent of the mortality and morbidity in the developing world.

A strategy for the future

Development organizations like the World Bank are facing these challenges with a renewed commitment to support the efforts of developing countries to address them. Our experience has taught us that environment is also a poverty and a development issue, and inherently relevant to poor people's hopes for a better life. Two things are indisputable in today's world: The reduction of poverty is critical to the quest for a sustainable future, and environmental sustainability is intrinsic to poverty reduction.

Earlier this year, the Bank introduced a new Environment Strategy as an integral part of a comprehensive approach to development. Central to the Strategy is the understanding that if we want development to succeed, environment cannot be an afterthought—it must be considered early and often in development planning.

The new Environment Strategy outlines how the World Bank will work together with its client countries to address their environmental challenges and ensure that Bank projects and programs integrate principles of environmental sustainability. The Strategy sets a vision, objectives, and a course of action for the longer term and suggests specific actions, targets, and institutional measures for the next five years. It is the product of a multiyear effort, including an extensive evaluation of the Bank's past performance, and numerous workshops and consultations with client governments, civil society, academia, multilateral and bilateral development agencies, and representatives of the private sector. The consultations played an important role in shaping the final document.

The Bank is profoundly grateful to all those who took the time and trouble to contribute to the process.

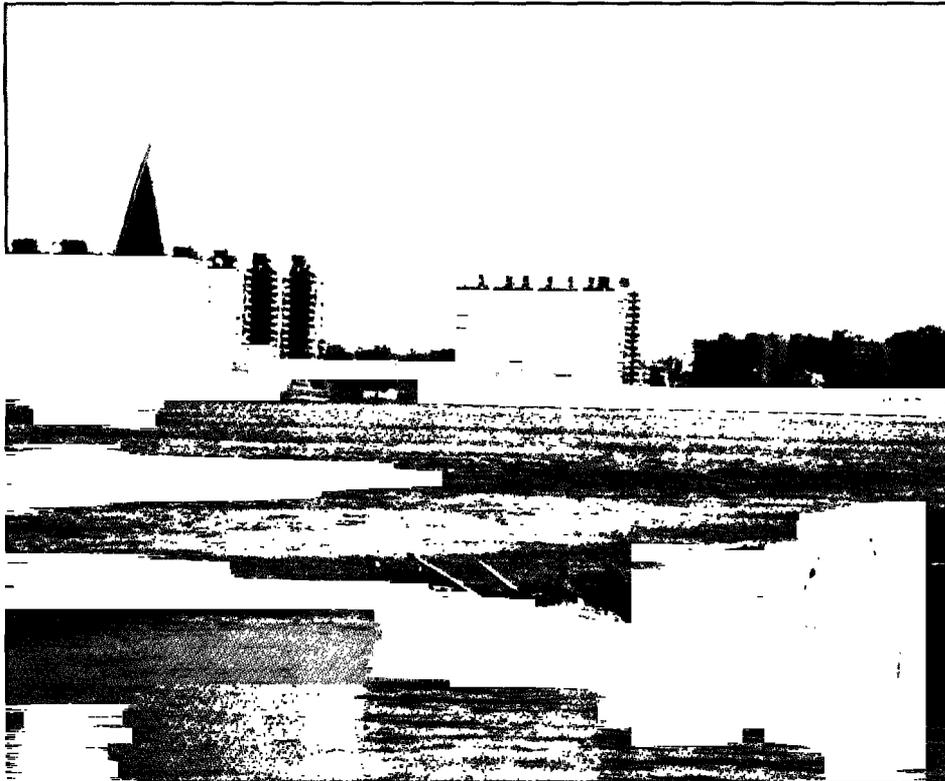
The Strategy places emphasis on developing country priorities, spelling out three objectives:

- *Improving the quality of life*—people's health, livelihood, and vulnerability—affected by environmental conditions
- *Improving the quality of growth*—by supporting policy, regulatory, and institutional frameworks for sustainable environmental management and by promoting sustainable private development
- *Protecting the quality of the regional and global commons*—by dealing with climate change, forests, water resources, and biodiversity.

These three elements make up the holistic approach the World Bank is pursuing in order to link environment and development, on both the local and global levels. Let me use two examples to demonstrate what this means in practice.

The first is about one of the regional and sub-regional initiatives supported by the World Bank. For countless generations, the Nile River has sustained the hopes and dreams and lives of millions of people living along its banks. Now, many of the Nile Basin countries are sharing a common vision of harnessing the full potential of regional cooperation through the Nile Basin Initiative (see *NewsUpdates*, page 53).

The riverine states—Ethiopia, Sudan, Eritrea, Egypt, Burundi, Rwanda, Tanzania, Democratic Republic of the Congo, Uganda, and Kenya—are seeking to develop the water resources of the Nile Basin in a sustainable and equitable



E. Dobbs

For countless generations, the Nile River has sustained the hopes, dreams, and lives of millions of people living along its banks. Cairo, Egypt.

way. The range of development projects will vary according to country needs, but will include water supply and sanitation, fisheries development, and sustainable management of wetlands and biodiversity conservation. Further, they will include joint health and environment activities, such as the control of malaria and other endemic diseases; protection of wildlife; environmental management; and disaster forecasting and management.

The second example comes from the coldest capital of the world, the city of Ulaanbaatar in Mongolia, where residents mainly use traditional coal stoves for cooking and to heat their felt tents (*gers*) and homes. More than 70,000 inefficient coal stoves produce high levels of air pollution—both indoors and outdoors—especially during the bitterly cold and long winter months when the smoke hovers over towns. This pollution accounts for half of the country's

child deaths and a major part of child and adult morbidity. It also contributes to Mongolia's greenhouse gas emis-



To help address Mongolia's greenhouse gas emissions the World Bank used a grant from the Global Environment Facility to develop, with the help of local and international experts, a small project to produce low-cost "kits" for insertion into traditional coal stoves. The kits improve the stove's efficiency, reduce indoor and outdoor air pollution, and also cut down CO_2 emissions by 54 percent.

R. Hassé

sions—one of the highest in the world per capita and per unit of GDP.

To address this problem, the World Bank used a grant from the Global Environment Facility to develop, with the help of local and international experts, a small project to produce low-cost "kits" for insertion into the normal stoves. The kits improve the stove's efficiency, reduce indoor and outdoor air pollution, and also cut down CO_2 emissions by 54 percent. Many low-income consumers, about two thirds of the population in the *ger* area, will benefit from these improvements in terms of fuel cost and health impacts (see *Photo*, below).

The Mongolia story is just one of countless such activities all over the world, where the World Bank is working with client countries to link local and global environmental concerns and to make the connections between environment and development.

Building a Sense of Community Worldwide — Bank Partnerships on the Environment

- As an implementing agency with the United Nations Development Program and United Nations Environment Program of the *Global Environment Facility (GEF)*, the Bank is supporting projects in four key areas: biodiversity conservation; addressing climate change; the phaseout of ozone-depleting substances; and the protection of international waters.
- As an implementing agency for the *Montreal Protocol's Multilateral Fund*, the Bank supports programs in 20 countries and has committed \$445 million since 1991 for over 558 projects to help enterprises convert to ozone friendly technologies.
- The *World Bank/WWF Alliance for Forest Conservation and Sustainable Use*, in which the Bank has invested close to \$2 million, calls for 50 million hectares (124 million acres) of highly threatened forest area around the world to be protected by 2005 (www-esd.worldbank.org/wwf).
- The *CEO Forum on Forests*—chaired by President Wolfensohn and the *World Bank/WWF Alliance*—is a private sector/civil society dialogue process for improved forest management and forest conservation.
- The World Bank, Conservation International, the GEF, and the MacArthur Foundation are partners in the *Critical Ecosystem Partnership Fund (CEPF)* to better safeguard developing countries' biodiversity hotspots—highly threatened regions where some 60 percent of all terrestrial species diversity are found on only 1.4 percent of the planet's total surface area (www.cepf.net).
- The World Bank partners with governments and private companies for the *Prototype Carbon Fund (PCF)*—a \$145 million fund created by the Bank to develop real-world experience on how carbon markets and trading could operate in developing countries and in countries with economies in transition (www.PrototypeCarbonFund.org).

Sustainable management of environment and natural resources require effective government policies, regulations, and institutional frameworks. The new strategy calls for support to strengthen the regulatory and enforcement capacity of client governments, and also for markets that work for the environment, not against it. New solutions must be found to address complex problems.

One of the innovations the strategy promotes is about correcting the failure of the market to recognize valuable ecosystem services. For example, many of the ecosystem services that forests provide—from timber to climate regulation to water supply to recreation—are not accounted for in decisionmaking be-

cause they do not enter into markets. To help alleviate this problem, the World Bank is working with several clients to develop systems of payments for environmental services that would help substitute for these missing markets. A system is already in place in Costa Rica, and work is under way in several other countries.

The World Bank is also answering the challenge to put social and “green” responsibility on the corporate agenda. Part of the strategy for the future is to transform the World Bank into a global leader on social and environmental responsibility. The Bank will focus on being a good citizen for the local environment and community we live in; re-

ducing the ecological footprint of its physical facilities; setting benchmarks for its social and environmental performance, and reporting on progress with independent verification; and greening its procurement practices.

Working together to make a difference

Now, more than ever, it is imperative that the World Bank help forge a sense of community and common interest both within the Bank and with partners and potential partners in client countries, other multilateral organizations, donor countries, nongovernmental organizations, and the private sector. Neither the Bank nor any other institution or even country can by itself reach the development goals needed to reduce poverty. Some partnerships already exist (see *Box*). Others are yet to be forged.

The World Summit on Sustainable Development to be held in Johannesburg in September 2002 will be an opportunity, not just for the World Bank but for the whole world, to demonstrate that the power of partnership is alive and well, and working for the common good. I echo the words of South Africa's Environment Minister Mohammed Valli Moosa, “*This Summit should be based on a constructive partnership between the developed and the developing world, which recognizes our common but differentiated responsibilities for working toward sustainable development.*”

Such partnerships and sense of community at all levels are critical if we are to help build an equitable, sustainable, and peaceful world. Now, more than ever, it's important for all of us—both individually and collectively—to believe that we can be a force for good.

— Kristalina Georgieva



The World Bank's Environment Strategy Consultations

In April 1999, the World Bank Group embarked on a comprehensive effort to develop an environment strategy to enhance the Bank's effectiveness in addressing environmental challenges in its client countries. As part of this effort, the World Bank sought to learn more about our partners' views about how best to link environmental protection with development assistance; how they view their environmental partnerships with the Bank; and how they view the Bank's overall effectiveness in providing environmental assistance.

The consultation process

In early May 2000, the World Bank initiated a broad-based consultation on the emerging Environment Strategy, using a progress report and six draft regional environment strategies as the basis for discussion. The consultation consisted of workshops with client and donor countries, including representatives of government, civil society, the private sector, and academia; a dialogue with several of our multilateral and bilateral partners; meetings with international nongovernmental organizations (NGOs); and a broad-based information dissemination and feedback process through e-mail and the Internet.

Between May 2000 and June 2001, over 30 formal and informal meetings or working sessions took place in each of the

Bank's client regions, as well as in Japan, North America, and Western Europe (see map). In addition, a dedicated Environment Strategy Consultation link on the World Bank Website provided access to the progress report, background papers, schedules, updates, links to open discussion forums, e-mail contacts, and a questionnaire. Between August 2000 and the end of January 2001, this website received nearly 35,000 download requests for papers, and more than 2,000 people from 98 countries registered and commented through the site.

The reports of the consultation meetings and outcomes in the six client regions, North America, Japan, and Western Europe can be found on the Environment Department website, along with background papers, and the text of the Environment Strategy, which was submitted to the World Bank Board of Executive Directors in July 2001.

The impact of the consultations on the strategy

The value of the consultations was inestimable. They provided a forum for face-to-face discussions, promoted greater dissemination of information about the issues, and have led to a better understanding among the participants of our mutual concerns. There was a consensus across the regions that the environmental issues

we are confronting worldwide are urgent and that this urgency must visibly inform the work of the Bank and the text of its Environment Strategy.

In general, most of the consultation participants agreed that environmental objectives should be systematically linked with development goals, particularly poverty reduction, as the sustainable use of natural resources is fundamental to the long-term success of those goals. Participants requested that the Bank acknowledge and strengthen its leading position as a global role model, facilitator, and catalyst, and recognize its responsibility to set high international benchmarks for good environmental practice. In addition, some urged the Bank to lobby industrial countries to improve their own environmental performance and to make larger financial commitments to aid developing nations in their efforts to build up sound environmental management. There was a general call in the consultations for the World Bank to make changes within its own operations in several critical areas. For example, the Bank should:

- Mandate a longer time-frame for policy analysis, planning, and assistance programs, so that the long-term impacts of development decisions on the social and physical environment can be better reflected in the design of its actions.

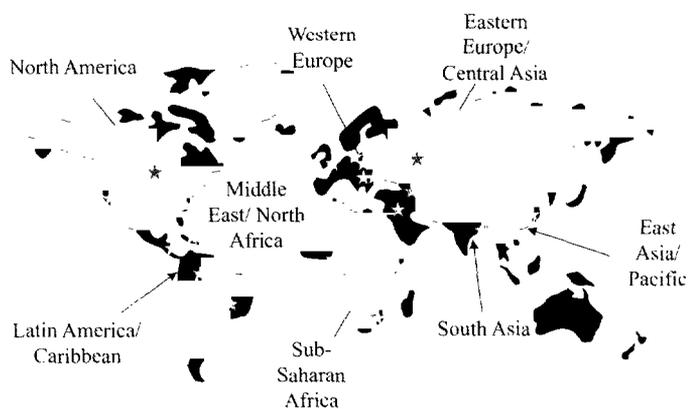
- Support Strategic Environmental Assessments and other in-depth, cross-sectoral environmental analyses early in country-policy dialogues, so that the complex, positive and negative synergies among development goals and activities may be captured or mitigated.

- Support increased transparency and accountability on the part of both borrowers and the World Bank by instituting regular reporting to external stakeholders, using clear benchmarks or performance indicators.

In direct response to the concerns the World Bank team heard expressed during the consultations, the Environment Strategy emphasizes that our environmental challenges must be tackled within the sustainable development framework. Development goals and key areas of assistance are characterized by three major objectives: quality of life, quality of growth, and quality of the regional and global commons. The Strategy's action plan has committed the Bank to the following implementation activities:

- Environmental analysis will occur earlier in the policy dialogue; cross-sectoral analysis will be strengthened; and strategic environmental assessments and country environment profiles will be

Formal and informal consultations on the Environment Strategy were conducted worldwide



applied systematically to help integrate longer-term spatial, ecological, and social concerns.

- The World Bank will emphasize in-country capacity building while carrying out project-level environmental assessments, strategic environmental assessments, and in the participatory processes related to initiatives such as Country Assistance Strategies and Poverty Reduction Strategy Papers.
- As part of their analytical work, World Bank staff will support the linkages among local and regional/global concerns by identifying the overlaps between environmental goals at the local, regional, and global levels.
- The World Bank will support greater transparency regarding its environmental performance by developing and

disseminating environmental and sustainability indicators for client countries, and by establishing an Environmental Performance Reporting unit within the Environment Department for the purpose of reporting performance based on clear benchmarks.

The Environment Strategy Consultation—and the Strategy, itself—is an ongoing process. In particular, it does not intend to cut short the global debate under way on development directions. The dialogue with all of our development partners will continue, and the Strategy will be revisited, evaluated, and adjusted.

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From Strategy Preparation to Implementation

INTEGRATING ENVIRONMENT INTO POVERTY REDUCTION STRATEGY PAPERS (PRSPs)

As of September 1999, all low-income countries use participatory processes to prepare PRSPs to obtain debt relief or concessional lending from the International Development Association. Building on the analytical base developed during Strategy preparation, the Bank has launched a pilot program to assist client countries in integrating environmental issues into their PRSPs.

The program takes a three-pronged approach:

1. Analytical work in pilot studies defines the poverty-environment linkages
2. Training on environment-poverty issues and cross-sectoral linkages in pilot countries equips decisionmakers with the knowledge and analytical skills to design effective interventions
3. Systematic reviews assess the environmental aspects and sustainability of PRSPs.

The first reviews indicate considerable variation across countries in the degree of environmental mainstreaming. They identify several good practices, and suggest areas for future improvement.

The preparation of the Bank's Environment Strategy led to a fruitful intellectual dialogue with colleagues in the Bank, clients, partners, and critics. It energized the Bank's environment community, reinforced management commitment to environmental sustainability, and strengthened cross-sectoral and cross-institutional dialogue and cooperation on environmental issues. Our consultations brought together diverse stakeholders, informed them about the Bank's agenda and objectives, and strengthened partnerships around common objectives. This process does not end with publishing the Strategy paper. Now we have to focus our energy on implementation.

A gradual shift

There is no clear dividing line between preparation and implementation. Even before the Strategy was completed, the intellectual debate and emerging strategic priorities started to influence project design and led to new programs. Following the strengthened focus on poverty-environment linkages, for example, we initiated a pilot program to integrate environment into Poverty Reduction Strategy Papers (PRSPs) (see *Box*, at left).

We also have to recognize that implementing the Strategy will be a gradual process. We need to align our incentives, skills mix, resources, and partnerships to accelerate the shift from viewing the environment as a separate, freestanding concern to considering it as an in-

tegral part of our development assistance. We then need to put this understanding into practice in our analytical work, policy dialogue, and project design.

Strengthening our internal incentives

To make a substantial and lasting difference, we must ensure that environmental issues are not just the concern of a small, specialized group, but are fully internalized into all Bank activities. The Strategy calls for a client-centered accountability framework, emphasizing that our core responsibility is to support sustainable development in our client countries.

Within the Bank, we need to maintain clear lines of responsibility and a consistent set of incentives that support the implementation of the Strategy. This includes incentives for working across sectors and disciplines. As an example of efforts to recognize good performance in this area, the first "green awards" were launched in June 2001 (see *Box*, top of next page).

"Green awards" are only part of a larger set of incentives underpinned by management commitment to improve our environmental performance. Other elements include systematic reviews and feedback to senior management on the environmental aspects of country assistance strategies (CASs), projects, and programs; and staff performance evaluations linked to key objectives of the Strategy.

GREEN AWARDS REWARD ENVIRONMENTAL EXCELLENCE

In June 2001, the World Bank awarded the first annual "Green Awards" to project directors and project teams across the Bank who have been promoting the mainstreaming of environment into their operations.

Awards were given in two categories: country director and task team. In the country director category, awards were given to James W. Adams (Tanzania and Uganda), Olivier Lafourcade (Mexico), Andrew N. Vorkink (South Central Europe Country Unit), and Mark Baird (Indonesia).

In the task team category, the winners were the Bolivia/Brazil Gas Pipeline Project, the MNSID Water Team, the India Energy Team, the Panama Land Administration Project, and the Poland Coal Restructuring Project.

Adjusting our skills

Environmental issues are inherently cross-sectoral. The need to integrate work on environment with other sectors is a key theme of the Strategy. The increasing focus on cross-sectoral work and the shift in emphasis from project-level safeguards toward integrated portfolio-level risk assessment and quality enhancement requires a gradual shift in staff skills. We also need to prepare to adjust to a changing global context, new development issues, and to the Bank's changing lending profile.

Training will be an important part of adjusting our skills. A comprehensive learning program is being developed that will focus on the priority areas identified by the Strategy: poverty-environment linkages, vulnerability to environmental change, environmental policy and compliance, environmental health, and natural resource management. New learning activities will focus on strategic environmental assessment (SEA) and country environ-

mental diagnostics. Particular effort will go to safeguards training to familiarize Bank staff and managers with the objectives and rationale of safeguard policies in order to improve compliance and development impact.

Integrating environmental aspects into country and sector programs and projects, and shifting accountability for environmental performance beyond the environment sector, require a cultural and institutional change. We will support this shift by joint appointments and work programs with other sectors, staff rotation, secondments with other sectors and partner institutions, and strategic human resource management.

Realigning our resources and partnerships

We are realigning budget allocations in response to changing work program priorities. But achieving the Strategy's objectives also requires addi-

tional resources. This was recognized by the Bank's management when it approved budget increases in two key areas: (1) improving the safeguard and compliance system; and (2) supporting the mainstreaming of environmental issues into Bank operations, with special focus on CASs, PRSPs, cross-sectoral and cross-institutional programs, and regional and sub-regional environmental activities.

No single public agency has the legitimacy, credibility, and financial and organizational capacity to influence decisively all major development issues alone. Partnerships with other development institutions, civil society, and the private sector can be important contributors to common objectives. We will continue our constructive partnerships in the framework of the Global Environment Facility (GEF), the Multilateral Fund for the Montreal Protocol (MFMP), the Prototype Carbon Fund (PCF), and others to help implement major international conventions and facilitate financial transfers to client countries. We are engaged in numerous other partnerships in a range of areas. During the coming years, we will systematically review and align our partnerships to support the effective implementation of the Strategy.

Monitoring progress

Our ultimate goals are long term. To ensure that we are on the right track, we need to set benchmarks, monitor progress, learn from successes and failures, and adjust our pro-

grams. Our Strategy puts special emphasis on enhancing our performance monitoring and reporting framework (see Box, below). We will use the Internet and other means of communication with key stakeholders to make available reports and information about the Bank's environmental performance, discuss issues, and receive feedback.

BENCHMARKS FOR MONITORING BANK PERFORMANCE IN STRATEGY IMPLEMENTATION

- Country diagnostic studies carried out to assess environmental priorities and management capacity to inform CASs and PRSPs in 5–15 priority countries annually. Level of environmental mainstreaming in CASs improved.
- Targeted environmental input (analytical work and training) in 5–15 priority PRSP countries annually.
- Structured learning on SEAs based on 10–20 SEAs carried out annually to inform sector projects and programs. Level of mainstreaming in key sectors improved.
- Systematic client training delivering 20,000–25,000 "participant training days" annually.
- Improved safeguard compliance indicators.
- Ninety percent of all operational Bank staff and managers trained in environmental safeguards by 2006.

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Focusing on Poverty and Environmental Links

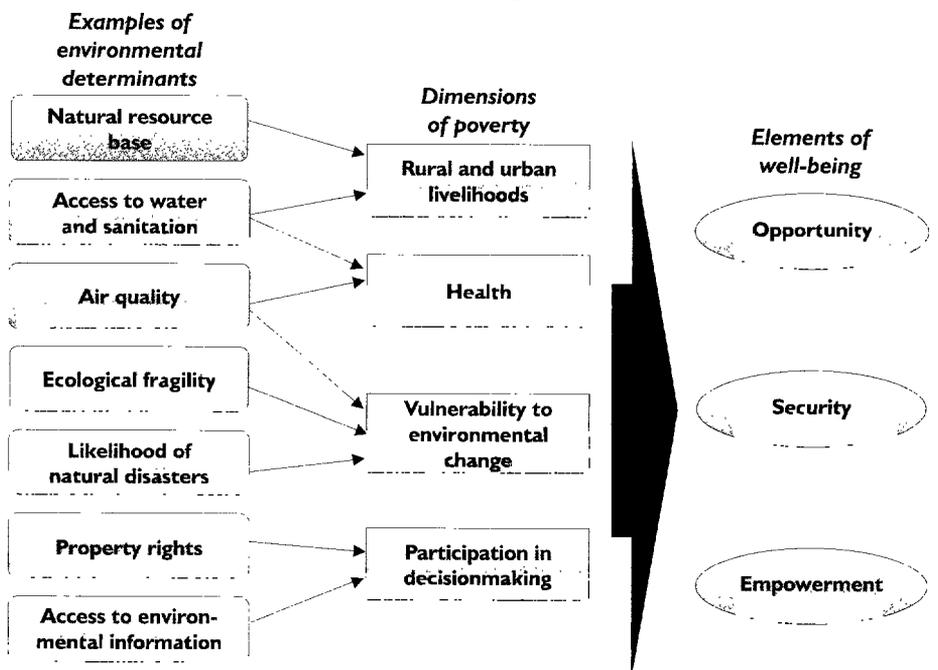
Poverty is not just a matter of low income. It is also a question of the poor having few economic opportunities, of insecurity in the face of financial and other risks, and of lack of voice or empowerment. The World Bank Environment Strategy employs this broader concept of poverty in order to highlight, in addition to the question of empowerment, three broad linkages between poverty and the environment: health, livelihoods, and vulnerability to natural disasters.

Environment and poverty are linked by a multiplicity of potential pathways (see *Figure*, below). While these linkages are in reality multi-dimensional and involve feedback mechanisms, the main tendencies can be seen in this *Figure*. The quality of the natural resource

base affects livelihoods, particularly in rural areas. The health of poor households is heavily influenced by access to water and sanitation, as well as exposure to indoor and outdoor air pollution. Poor households are often the most exposed to natural disaster risks, partly linked to the fragility of nearby ecological systems. Lack of property rights and access to information limits the ability of the poor to participate in decisions affecting their welfare.

This broader notion of poverty and of poverty-environment links is beginning to be employed by World Bank clients in the preparation of Poverty Reduction Strategy Papers (PRSPs). Initially required as a condition for debt relief, the PRSP will become a key document in determining Bank assistance to all low-income

Environmental dimensions of poverty



SOURCEBOOK FOR POVERTY REDUCTION STRATEGY PAPERS (PRSPs)

Poverty Reduction Strategy Papers provide the basis for assistance from the Bank and the IMF and for debt relief under the Highly Indebted Poor Country (HIPC) initiative. PRSPs are intended to be country-driven, comprehensive in scope, partnership-oriented, and participatory.

The PRSP Sourcebook was designed to assist countries to develop and strengthen their poverty reduction strategies. It is meant to be used selectively as a resource to provide information about possible approaches. The book covers core techniques, including poverty measurement and analysis, cross-cutting issues such as gender and environment, and a full range of macroeconomic and sectoral issues.

The Environment chapter begins with an overview of the ways in which environmental conditions can contribute to different aspects of poverty. It then outlines an approach to analyzing these links in order to define priorities both between sectors and within the environmental domain—this is broken down into understanding the links, choosing targets for improvement, choosing the most effective public action, and monitoring and evaluation of the actions implemented. Next, the chapter summarizes an approach to “mainstreaming” of environment in PRSPs that has been developed within the World Bank. It also provides summary lessons from a systematic review of 25 interim and full PRSPs. To field test many of the ideas in the environment chapter, two workshops on “Mainstreaming Environment in PRSPs” were held in Nairobi and Johannesburg in February and March 2001. These workshops, organized in partnership with DFID, aimed to contribute to integrating environmental issues and opportunities in PRSPs and their underlying processes. At the Johannesburg meeting, participants came from Lesotho, Malawi, Mozambique, and Zambia; at the Nairobi meeting, participants came from Ethiopia, Kenya, Tanzania, and Uganda. Donors from the EU and the Netherlands were also represented. Similar workshops are planned for West Africa.

In Europe and Central Asia, support for the PRSP process was provided to the governments of Albania, Azerbaijan, and Georgia, with work upcoming in Bosnia and Herzegovina, Tajikistan, and the Kyrgyz Republic. Two successful workshops were held in Albania and Azerbaijan to discuss the macroeconomic and sectoral linkages between the main components of the PRSP strategy and the environment. As a result, the environment is being mainstreamed in the PRSP process, with working groups taking more account of the important linkages. This work was supported by grants from DFID. In Georgia, the regional environment unit is working closely with the government on PRSP preparation, with the assistance of Austrian trust funds.

(IDA) countries as of July 2002 (see *Box*, above).

Environmental health and poverty

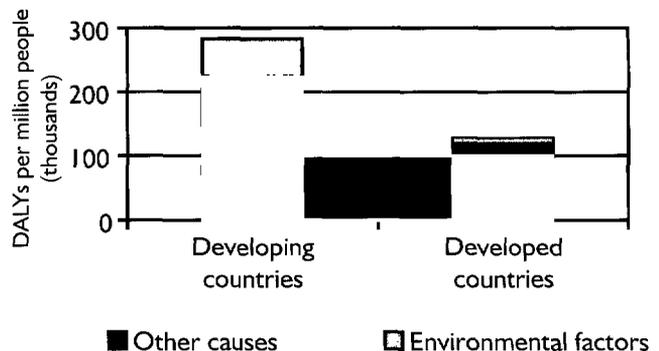
Recent estimates suggest that premature death and illness due to major environmental health risks account for one fifth of the total burden of disease in the developing world—comparable to malnutrition and larger than any other preventable risk factors and groups of disease causes. The contribution of environmental

risks to the total burden of disease is 10 times larger in poor countries than it is in rich countries (see *Figure*, at right).

Environmental health risks fall into two broad categories. Traditional hazards, related to poverty and lack of development, include lack of safe water, inadequate sanitation and waste disposal, indoor air pollution, and vector-borne diseases such as malaria. These risks affect developing countries the most. Modern hazards caused by development without environmental safeguards

include urban (outdoor) air pollution and occupational

The environmental contribution to the burden of disease is highest in developing countries



Note: Disability-Adjusted Life Years (DALYs) are a measure of the burden of disease. They reflect the total amount of healthy life lost, to all causes, whether from premature mortality or from some degree of disability during a period of time.

and other exposure to agro-industrial chemicals and waste.

Worldwide, an estimated 3 million people in developing countries die every year from water-related diseases caused by exposure to microbiological pathogens resulting from inadequate sanitation and waste disposal, inadequate water supply for personal hygiene, exposure to unsafe drinking water, and bacteriological contamination through a variety of other water uses, such as cooking and bathing. The majority of fatalities are children under age 5. Water-related diseases impose an especially large health burden in the Africa, Asia, and Pacific regions. In India alone, nearly 1 million people die annually as a result of water-related diseases.

More than half of the world's households use unprocessed solid fuels, particularly biomass (wood, crop residues, and dung) for cooking and heating, often in inefficient stoves with-



responsible for about 800,000 deaths annually.

Natural resources and the livelihoods of poor households

Research shows that links between the natural environment and the livelihoods of the poor can be very strong, although the precise nature and direction of the links can vary substantially from case to case. Poor rural households often derive a significant share of their incomes from natural resources. A study of 29 villages in southern Zimbabwe shows that environmental resources account for more than 30 percent of average total household income, and the poorer the household, the greater the share of income from environmental resources (see *Figure*, at right). However, even though the poor are more resource dependent, they generally use less of these resources than the better-off. The poorest households use three to four times less in quantity terms than the richest. This illustrates two key points: first, that the poorest are most vulnerable to resource degradation in relative terms; but second, that pressure on natural resources will not automatically be alleviated when income rises.

Poor rural women in developing countries tend to be disproportionately affected by the degradation of natural resources because they tend to be pri-

marily involved in the collection of fuel, fodder, and water. Depending on the availability of biomass resources, collection of fuel and fodder may take anywhere from 2 to 9 hours. In Lombok, Indonesia, and in some areas of Kenya, for example, women spend 7 hours each day on cooking and on collecting dead wood or agricultural residues as fuel. Because of deforestation, they may have to walk longer distances and spend more time and energy to collect fuelwood. This reduces time spent on income-generating activities, crop production, and household and child-rearing responsibilities. In addition, carrying heavy loads of fuel-

wood appears to harm many women's health.

Poverty and natural disasters

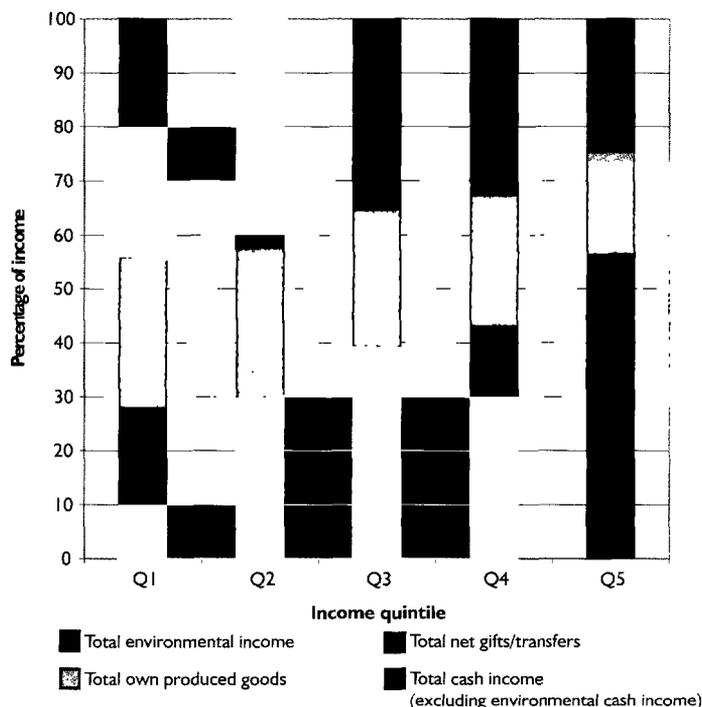
Poor people are also disproportionately vulnerable to natural disasters, because they tend to lack access to secure housing and to live on marginal land more prone to the effects of droughts, floods, or landslides. With few savings, the poor also are much more vulnerable to consumption shortfalls in times of crisis.

The vulnerability of the poor to natural disasters is compounded by the generally weak capacity of government

out proper ventilation. The outcome is that people—mainly poor women and children in rural areas and urban slums—are exposed to high levels of indoor air pollution. It is estimated that nearly 2 million children and women die every year in developing countries as a result. About half of these deaths occur in India and China.

Vector-borne diseases are affected by a range of environmental conditions and factors, including inadequate drainage from drinking water and from irrigation; polluted and standing water; clogged storm drains; floods; and open sewers and certain types of sanitation. In Africa alone, malaria is

Zimbabwe — Poorer households obtain a greater share of their income from environmental resources



Source: Cavendish, W. 1998. "The Complexity of the Commons: Environmental Resource Demands in Rural Zimbabwe." WPS/99-8, May 1998. Oxford University: Centre for the Study of African Economies (processed).



— Ghana

agencies to predict and respond to disasters and by the lack of social safety nets that would protect the incomes and consumption of the poor during and after disasters. In the Philippines, for example, the extreme weather associated with El Niño caused a greater overall increase in poverty than the financial crisis. The El Niño shock was regressive, in that it increased inequality.

When ecosystems collapse, the social systems built to manage

and use them come under threat. This can lead to conflicts, particularly over environmental resources such as water and fisheries.

Looking forward

The Environment Strategy outlines a broad approach to dealing with the challenges of poverty and environment. Part of the response entails emphasizing poverty-environment links in analytical work and in Country Assistance Strategies,

and equipping our clients to deal with poverty-environment links as they prepare PRSPs. Operational responses at the level of projects and non-lending services will include:

- Identifying cost-effective measures to reduce environmental health risks through a range of sector investments, including water and sanitation, energy, transport, agriculture, and health.

- Enhancing livelihoods by protecting the long-run productivity of natural resources and ecosystems. This will involve reforming property rights; increasing the scope of community-driven development programs and community forest management; assisting farmers to invest in the quality of their land; piloting new mechanisms such as payments for ecological services; and reducing the level of distortions in prices and incentives affecting resource management decisions.

- Reducing the risks of natural disasters by increasing analytical work; identifying natural resource investments (such as upland forest planting) that can reduce the incidence and severity of natural disasters; improving weather forecasting; and providing information to poor households and communities on the risks they face.

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Protecting the Global Commons

Protecting the global and regional commons is a key component of the World Bank's Environment Strategy. Developing countries are likely to be most threatened by global environmental impacts since a larger share of the population is dependent on natural resources for their livelihoods, and because they are less able to afford mitigation and adaptation measures. Climate change is projected to cause significant increases in famine and hunger in many of

the world's poorest areas. Decreasing precipitation will worsen conditions in many arid and semi-arid areas, especially in Sub-Saharan Africa. Rising sea levels could displace millions of people from small-island states such as the Maldives and from low-lying delta areas of Bangladesh, China, and Egypt, while increasing temperatures could increase the incidence of vector-borne diseases such as malaria and dengue fever.

THREATS TO THE GLOBAL ENVIRONMENT

While the task may seem monumental, protecting the global commons—climate, ecosystems, the diversity of life, shared water resources—must be at the forefront of sustainable development. Water is essential for the sustenance and health of humankind and indeed all species. Coastal and marine ecosystems include some of the most diverse and productive habitats on Earth while marine fisheries are an important part of the world's food supply. Agriculture, forestry, water resource management, and human settlement patterns depend on a stable climate. Ecological processes maintain soil productivity, recycle nutrients, cleanse air and water, and regulate climate cycles. At the genetic level, diversity found in natural life forms supports the breeding programs necessary to protect and improve cultivated plants and domesticated animals, and thus helps safeguard food security. Yet, the global commons are being degraded at an alarming rate:

- Eleven percent of the Earth's vegetated surface (1.2 billion hectares) has been significantly degraded by human activity over the past 45 years, affecting more than 900 million people in 100 countries.
- More than one fifth of the world's tropical forests have been cleared since 1960. Globally, 12 million to 15 million hectares of forest are lost every year, in addition to substantial areas of grasslands and wetlands.
- The Earth is losing species at a rate higher than at any time in its history.
- The world's oceans are threatened by nutrient and heavy metal pollution, severe overfishing, and disease. Coral reefs are being degraded at an unprecedented rate—as much as 40 percent of the world's reefs will be lost in the next 10 to 20 years at current rates.
- According to the Intergovernmental Panel on Climate Change, the Earth's average surface temperature is expected to rise by between 1.4 and 5.8 degrees C during the next 100 years, compared with just over 0.6 degrees during the last 100 years. Sea levels, which have risen by 10 to 20 centimeters since 1900, could rise by between 8 and 88 centimeters during the next 100 years.

Genetic varieties, species, and plant and animal communities have critical uses as food, sources of new crop varieties, commodities, medicines, pollinators, soil formers, and moderators of climate and hydrology. Biodiversity loss can thus undermine agricultural productivity both now and in the future. Further, ecosystems provide important benefits such as water storage and purification, flood and storm protection, and nutrient retention. In addition, many people consider biodiversity and ecosystems as having intrinsic value for moral, religious, or cultural reasons. These various values have been recognized in the Convention on Biological Diversity, as well as the more targeted Ramsar Convention on Wetlands.

The Bank's role

There has been a slow but growing realization that global environmental concerns, such as long-term climate change and biodiversity loss, should be addressed as an extension of the local, national, and regional environmental issues that underpin sustainable development. In that light, the Bank has found that global environmental interventions can only be effective if such programs take into account the development needs, local priorities, and constraints of communities and countries.

The Bank is committed to assisting client countries address global environmental objec-

tives through international conventions and their associated protocols, including the conventions on climate change, stratospheric ozone protection, and biodiversity. In the early 1990s, the World Bank began a systematic program to assist client countries meet regional and global environmental objectives. The initial role was as an implementing agency for two global financing mechanisms: the Multilateral Fund for the Montreal Protocol (MFMP) and the Global Environment Facility (GEF). Since then, the Bank has multiplied and diversified its initiatives, partnerships, projects, and funding sources in an effort to better help client countries meet the objectives of the global conventions.

Under the Bank's Environment Strategy, the Bank's global environmental interventions will build on five principles:

1. *Focus on the positive linkages between poverty reduction and environmental protection.* Many interventions designed to reduce poverty by improving local environmental quality and sustainable natural resource management also provide regional and global benefits. For example, community-based forest management projects can support sustainable livelihoods while reducing forest loss and preserving biodiversity and carbon sinks.
2. *Focus first on local environmental benefits, and build*

on overlaps with regional and global benefits. There are many areas of potential overlap between local and global environmental benefits. For example, replacing low-quality biomass fuels with modern and renewable energy sources in rural and peri-urban households reduces indoor air pollution, mitigates respiratory diseases, and reduces greenhouse gas emissions.

3. *Address the vulnerability and adaptation needs of developing countries.* Poor countries suffer disproportionately from the degradation of the global commons and from its consequences, such as climate change. The Bank will help assess the long-term impacts of climate change on the vulnerability of people in client countries. These assessments will contribute to broader poverty reduction strategies.
4. *Facilitate transfer of financial resources to client countries to help them meet the costs of generating global environmental benefits not matched by national benefits.* In cases where actions designed to address regional and global concerns are not in the short- and medium-term interests of developing countries, the Bank will seek to engage the GEF, the MFMP, or other special financing

mechanisms to compensate countries for the incremental costs they incur to protect the global commons. In this regard, assistance with the phase-out of persistent organic pollutants (POPs) will be an important new area in which we can put the lessons learned under the MFMP program to work (see *Box*, top of page 20).

5. *Stimulate markets for global environmental public goods.* We will help our client countries develop and benefit from trade in environmentally credible goods and services, such as greenhouse gas emission reductions, and sustainably harvested and independently verified natural resources.

Projects and programs

Over the last decade, the Bank has developed a sizable portfolio that directly addresses global environmental concerns. Since 1991, the Bank has committed more than \$1.5 billion dollars in combined GEF and MFMP funding, with associated funding of \$5 billion for climate change mitigation, biodiversity conservation, the phaseout of ozone-depleting substances (see *Box*, bottom of page 20), and protection of international waters. In the climate change area, the World Bank/GEF portfolio today includes 62 projects, for which

GLOBAL ACTION UNDER THE STOCKHOLM CONVENTION ON PERSISTENT ORGANIC POLLUTANTS

Persistent Organic Pollutants (POPs) are considered to be among the most dangerous pollutants released into the environment by human activity. They are highly toxic, and can cause death, disease, and birth defects, among both humans and wildlife. Once released into the environment, they remain intact for exceptionally long periods of time and are transported by air and water, resulting in widespread distribution across the globe. They bioaccumulate in the food chain, and can lead to high concentrations in fish, predatory birds, mammals, and humans.

An international treaty to control POPs was concluded in Stockholm in May 2001. Its goal is to protect human health and the environment from the generation, use, and release of POPs. The Stockholm Convention includes comprehensive provisions to address the risks posed by an initial group of 12 POPs (aldrin, chlordane, chlorinated dioxins and furans, DDT, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, polychlorinated biphenyls (PCBs), and toxaphene) used in agriculture, disease vector control, industrial processes and created as unintentional byproducts through some combustion processes. Other chemicals may be added to the list as scientific knowledge develops.

All parties to the Convention commit to developing alternatives to the use of POPs and to developing action plans to reduce or eliminate the release of POPs to the environment. The World Bank is assisting client countries to prepare for the implementation of the the Stockholm Convention through its Montreal Protocol/POPs Unit. Countries are presently in the early stages of developing capacity to meet their future obligations under the Convention. Under a Canadian POPs Trust Fund of CDN\$ 20 million established at the World Bank and in its role as an implementing agency of the GEF (named as the interim financial mechanism under the convention), the Bank is working with countries in all regions to help them better understand the Convention's obligations and the present status of POPs within their countries. The Bank is also assisting countries in identifying initial capacity-building and enabling activities to help address identified issues.

\$6.2 billion has been mobilized, including \$730 million from the GEF and the balance from the World Bank Group, donors, private investors, and government counterparts.

The GEF program has catalyzed funding for local action in support of global environmental objectives, effectively engaged NGOs and other elements of civil society in the country dialogue on environmental management, and piloted innovative approaches to financing biodiversity conservation and renewable energy development. With access to GEF resources, the Bank has also been able to help riparian countries and stakeholders

agree and act on regional environmental priorities, thus supporting the development and implementation of regional conventions or agreements for the management of a number of international river ba-

sins, shared lakes, regional seas, and shared groundwater aquifers. GEF resources have also been successful in catalyzing private sector financing for environmental improvements.

The GEF and MFMP programs complement a significantly larger share of Bank lending targeted toward the conservation and sustainable use of biodiversity, the sustainable use of forests, the management of fresh and marine water resources, and the halting of land degradation. The broader country and sector dialogue and consequent lending indirectly support such concerns. For example, lending for energy pricing reform creates incentives for adoption of climate-friendly technologies. Assistance for agricultural intensification or rural nonfarm employment often serves to reduce pressures on natural habitats and biodiversity. Capacity building for management of local environmental issues will help overcome barriers to addressing global concerns. These impacts need to be better understood and evaluated.

Mainstreaming

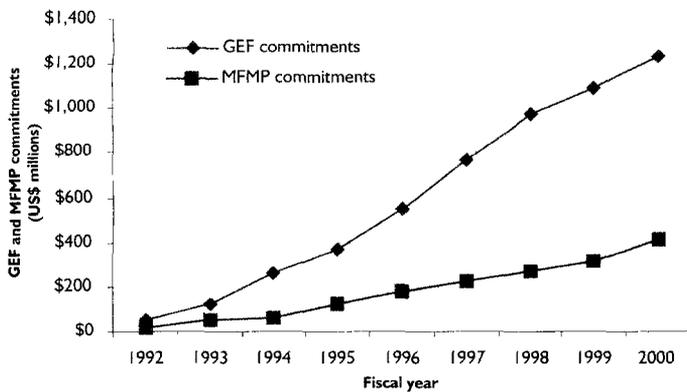
While many GEF operations were largely independent from

A DECADE OF OZONE PROTECTION AT THE WORLD BANK

Signed in 1987, the Montreal Protocol for the Protection of the Ozone Layer differentiates between large consuming countries of ozone-depleting substances (ODS) and developing countries with consumption under 0.3 kg per capita. The latter group of countries (Article 5 countries) are allowed more time to phase out ODS. In addition, Article 5 countries have received financial assistance to meet the incremental costs of converting to ozone-friendly technologies through the Multilateral Fund (MLF) for the Implementation of the Montreal Protocol

In its 10 years working under the MLF mechanism, the Bank has channeled \$291 million in grant funding through 350 MLF-approved projects in over 20 Article 5 countries. The Bank was the first agency to tackle the supply side of ODS. Since introducing these types of projects the Bank has signed agreements with the two largest Article 5 CFC producers and the Russian Federation—constituting 70 percent of global production by Article 5 countries and Russia. Russia has as of December 2000, ended all CFC production, and China and India are decreasing production annually with final closure by 2009. Completed projects have resulted in the phaseout of over 100,000 tons of ozone-depleting potential—74 percent of the total ozone-depleting potential has been phased out under the MLF to date.

GEF and MFMP commitments, fiscal 1992–2000



Note: Commitment amounts are based on World Bank management approvals.

World Bank operations during the “pilot” phase of the GEF, there has been a steady increase in the integration of GEF and Bank operations. The proportion of Bank-GEF projects with directly associated IDA or IBRD funding increased steadily from 23 percent in fiscal 1995 to 65 percent in fiscal 2000. In the energy sector, energy efficiency and renewable energy operations today comprise a huge share of the Bank’s portfolio in many client countries.

Continued progress in incorporating global environmental objectives at the project level depends on *mainstreaming* the environment and its global dimension in the country dialogue. Progress on this front has been mixed. The analysis of CASs completed in fiscal 1999 showed that a limited number addressed local environmental issues of global concern and that GEF activities, although mostly identified, were only in part linked strategically to the CAS objectives.

With a few notable exceptions, CASs did not acknowledge a role for the Bank in helping countries address their responsibilities under global environmental conventions.

Partnerships

The Bank has entered into numerous formal and informal partnerships to address issues of regional and global importance that cannot be addressed at the country level. These partnerships have provided an important adjunct to the traditional Bank-government relationship by building on the emergence of a vocal civil society and the increasing importance of private sector investments.

Through the CEO Forum on Forests, the Bank has sought to apply the process of independent, transparent multistakeholder verification of compliance with forestry management standards that protect the livelihoods of the poor. Under the IUCN/World Bank-



World Bank

Poison dart frogs are native to the tropical rainforests of Nicaragua, Costa Rica, and Panama.

sponsored World Commission on Dams (WCD), government, NGO, and industry representatives have laid out key considerations governing the development of dams. We have also helped catalyze new market mechanisms, as in the case of the Prototype Carbon Fund (PCF), which demonstrates the feasibility of trading greenhouse gas emission reductions under the emerging regulatory framework of the Kyoto Protocol’s Clean Development Mechanism (CDM). The World Bank/WWF Forest Alliance was formed in 1998 as a result of both organizations’ deep concern about the continuing depletion of forests

worldwide and the effect of this depletion on many of the world’s poorest people. Its goal is to significantly reduce the rate of loss and degradation of forests of all types. Other partnerships have engaged civil society in implementing projects with significant global environmental benefits. The Critical Ecosystem Partnership Fund, for example, provides small grants to NGOs to manage ecosystem hotspots around the world.

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The Safeguard Policies at the Core of the Environment Strategy

A REGIONAL PERSPECTIVE ON SAFEGUARDS — THE AFRICA REGION

A few countries in Sub-Saharan Africa have strong capacities in environmental assessment. Most, however, do not, especially in terms of enforcement and compliance. This provides us a challenge and opportunity to emphasize capacity building and to spend more time working with task teams and borrowers. Even with some degree of technical and human capacity, environmental units in African countries have to convince heavyweight public decisionmakers such as Ministries of Finance or Planning, a situation which has its parallels inside the Bank.

In spite of these challenges, noticeable progress has been made recently in areas like privatization where environmental audits are more and more frequent. The Africa Region is particularly proud of the praise it received for good safeguard practice on the Regional Trade Project, an innovative field.

More efforts are needed to strengthen EA capacity and create, in most cases, social safeguard capacity. Above and beyond the recurrent issue of getting the right resources to work more effectively, what is most important is to move from a compliance mentality to a pro-active mode by focusing on the safeguards' purpose, such as protecting vulnerable groups and the environment from unintended impacts of Bank-funded projects in Africa and ideally making our projects more sustainable for the long run.

The World Bank's environmental agenda has evolved gradually, moving from a "do no harm" focus in the 1980s to a more comprehensive, proactive agenda aimed at "promoting good" today. The Bank has designated 10 key environmental and social "safeguard policies," and the entire project pipeline is subject to systematic screening as a standard requirement of project preparation and approval. Safeguard policies and procedures provide guidelines for staff in identifying and preparing programs and projects. They help integrate environmental and social concerns into design and implementation of Bank-supported activities and promote sustainable development objectives in client countries.

The safeguard policies complement international and regional environmental agreements signed by client countries, relevant national and local laws and procedures, and national requirements for environmental assessment. Although not written as an integrated set of documents, the Bank's safeguard policies share complementary objectives and underlying principles. They have become internationally recognized references.

Evolution and coverage of safeguard policies

The Bank's social safeguard policies, namely *Involuntary*

Resettlement and Indigenous Peoples, were among the first to be established, in the early 1980s. Together with the 1989 *Environmental Assessment (EA) Policy*, they have helped the Bank and its clients incorporate environmental and social aspects of proposed investments into the decisionmaking process. Since 1989, policies have been added to further protect specific aspects of the environment and physical cultural property. This reflects a continual broadening of the safeguard approach, from an evaluation of potential impacts using EA, to inclusion of complementary instruments such as resettlement plans, indigenous peoples' development plans, and pest management plans.

The coverage and quality of application of Bank safeguard policies at a project level have gradually improved over the past two decades. Our clients, staff, and partners have become better at identifying, early on, investments with potentially significant adverse environmental and social impacts. The experience of working on Bank projects often has contributed to strengthening local capacity to carry out EAs and implement environmental management plans. Public consultation and disclosure mechanisms have fostered debate about alternative development options and impacts from proposed programs, and



J. & K. MacKinnon

— Indonesia

helped communities to better benefit from development activities.

Challenges for improvement

Early evaluation. A 1996 review by the Bank's Operations Evaluation Department (OED) found that EAs in many projects subject to full environmental assessment (category A) did not adequately consider alternative designs, or started too late to adequately influence decisionmaking. Similar problems throughout the world have led to increased use of EAs at the strategic level.

Changing lending profile. Increased emphasis on policy and programmatic lending, use of innovative instruments such as Adaptable Program Loans (APLs) and Learning and Innovation Loans (LILs), and expansion of Community Driven Development (CDD), pose challenges for safeguard policies, which must be adopted

and effectively used in these settings. The principles of consultation and disclosure of information must be applied routinely.

Development of integrated safeguard system. Treatment and implementation of safeguard policies as an integrated "suite" is now accomplished through a "parliament" of practitioners in the Bank: the Safeguard Management and Review Team (SMART), which includes all regional safeguard policies coordinators and policy specialists. Its secretariat is provided by the Quality Assurance and Compliance Unit (QACU), which reports to the Vice-Presidency for Environmentally and Socially Sustainable Development (ESSD).

Strengthening institutional frameworks. Implementing safeguard policies in projects depends on the regulatory and incentive framework established by client country environmental legislation. The

Bank will continue to assist many countries in introducing environmental policies and procedures.

Increased emphasis on supervision. Bank reviews indicate that whereas environmental and social safeguard policies are often successfully used during project design and preparation, problems can occur in implementation of agreed mitigation, monitoring, and institutional strengthening actions. This requires careful evaluation of client countries' commitment, access to resources, and skills needed to undertake agreed actions.

Greater cost efficiency. Increasing costs of compliance with safeguard policies have become a concern for the Bank and its clients. The most effective way to reduce costs is to identify issues at the earliest phase of program or project development and fully integrate safeguard studies into the planning, review, and decisionmaking process.

Expanded coordination with partners. Use of EA and other instruments can be improved by expanding cooperation with other international financial institutions, donors, export credit agencies, and the private sector. Coordinated approaches to safeguard policies at the institutional and/or project level helps to avoid conflicts and improves project development.

Coming up

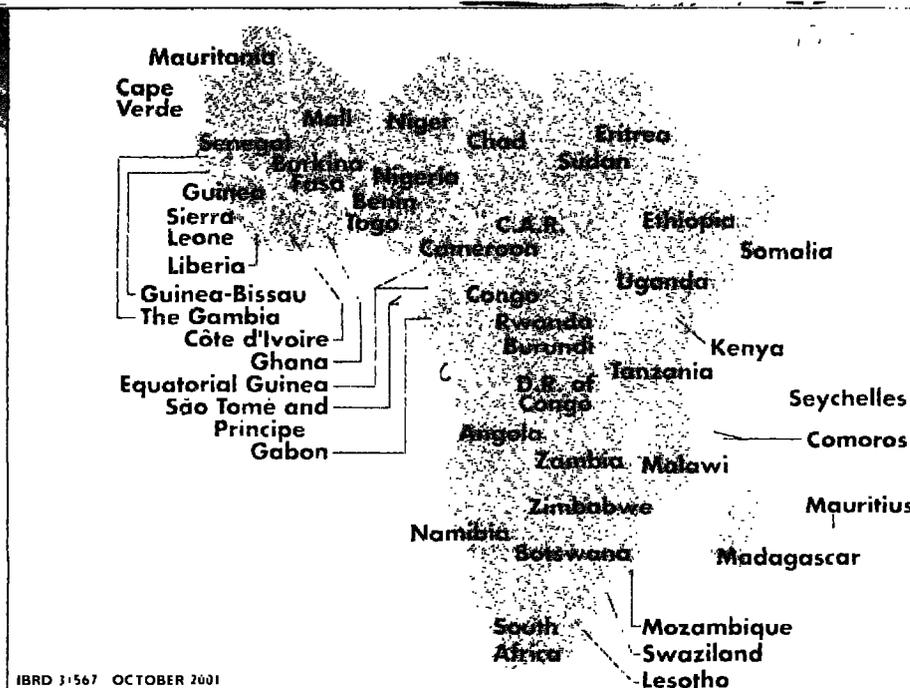
Preparation of the Bank's Environment Strategy provided an opportunity to examine ways to increase safeguard policy effectiveness. Efforts are focusing on:

- Mainstreaming the integrated safeguard policy approach, notably through use of an Integrated Safeguard Data Sheet
- Reaching out to borrowers, other financiers, consultants, and civil society through information and training programs in association with the World Bank Institute
- Strengthening borrowers' policies and institutional capacity
- Expanding the use of Strategic Environmental Assessment (SEA) as a tool for "upstreaming" environmental and social safeguards issues into development policy, planning, and investment processes
- Harmonizing environmental assessment principles among international development financiers.

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Safeguards website — <http://web1n0018.worldbank.org/institutional/manuals/opmanual.nsf>

Africa Region



In Africa, perhaps more than in any other region, the World Bank's mission to fight poverty is inescapably linked with

environmental protection and improved management of renewable natural resources. In both rural and urban settings, the poor are the most affected by the loss of natural resources and the deterioration of environmental services. They are also at the greatest risk from natural disasters, particularly droughts and floods, whose impacts are aggravated by environmental degradation. The national economies of African countries rely mainly on agriculture and on extraction of mineral and biological resources. In Africa, better environmental management is not just a matter of preserving nature; it is a matter of survival.

Yet this natural resource base on which so much depends is steadily deteriorating. Many parts of the region are charac-

terized by high rates of soil erosion and deforestation, as well as declining rangelands, wetlands, and fish and wildlife populations. Climate variations, already a serious threat to livelihoods and economic development in much of the region, are likely to be further aggravated by climate change within the next few decades. Environmental degradation is—along with population growth, political conflicts, and the HIV-AIDS crisis—one of the major factors threatening the fragile progress in economic, social, and political development that many African countries have achieved over the past few decades.

The Africa Region Environment Strategy

The Africa Region Environment Strategy (ARES) aims to help World Bank clients achieve sustainable poverty reduction through better environmental management. Approaching environment through a "poverty lens," the strategy targets four main objectives:

- *Ensuring sustainable livelihoods.* The strategy highlights the overwhelming importance of land degradation and desertification; the deterioration in quality and growing scarcity of surface water and groundwater; and the loss of productive natural ecosystems.
- *Improving environmental health.* Africans suffer a higher total burden of disease than their counterparts in other regions. Many of the most widespread and debilitating diseases, particularly those that disproportionately affect the poor, stem from environmental conditions such as water and air pollution.
- *Reducing vulnerability to natural disasters and extreme climate events.* Africa is characterized by a high degree of climate variability, resulting in chronic and severe impacts on economic development and livelihoods, particularly of the poor. Droughts, floods, landslides, and wildfires are all naturally occurring events whose frequency and impacts can be increased by environmental degradation.
- *Maintaining global ecosystems and values.* Africa's vast and unique biodiversity endowment is rapidly being lost as natural ecosystems are depleted or converted to other uses. The region is also highly vulnerable to climate change, which is expected to increase average temperatures and make rainfall even more erratic, particularly in the already hard-pressed Sudan-Saharan and southern regions.

Lessons learned

The Africa Environment Strategy summarizes Bank experience and lessons learned, including:

- The importance of longer time frames to support institutional development and environmental action
- The need for institutional capacity building to go beyond national to

local government and community levels, and to take into account the changing roles of government, civil society, and the private sector

- The need to move the Environmental Assessment (EA) process both "upstream" into sectoral and area-based planning processes and "downstream" into the project implementation phase
- The need to develop long-term and sustainable financing mechanisms, and to ensure that institutional development is based on a realistic assessment of resources available now and in the future.

Priorities for action

Following the structure of the Bank-wide Environment Strategy, the Africa Strategy organizes priorities for action within the three broad categories of improving the quality of life, improving the quality of growth, and maintaining the quality of the global commons.

The strategy identifies specific priorities for action in six sub-regions: the Sudano-Saharan belt, humid West Africa, the Congo Basin, East Africa, Southern Africa, and the Indian Ocean Islands. Some issues, such as land degradation, are equally significant across the continent, while others, such as coastal zone management and water scarcity, are more localized. The strategy also identifies priorities relating to key sectors. Sectors targeted for their strong significance to environmental management include agriculture and rural development, natural resource management, energy, urban development, water resource management, transport, health, and private sector development.

The strategy calls for a "people-focused ecosystem management" approach to development. Maintaining well-functioning ecosystems and ecological processes is

critical to meeting human needs and enhancing economic production on a sustainable basis. For example, the Bank is actively supporting integrated coastal zone management through regional, sub-regional, and country-specific initiatives, including coastal and marine biodiversity management projects in Mozambique, the Gambia, Senegal, Guinea and Guinea Bissau, as well as a Western Indian Ocean Fisheries project (see *Box*, page 26). Adopting an ecosystem-based approach has important strategic and operational implications, such as planning and managing land use over large (often cross-border) areas; developing consensus and coordination among many different stakeholders; making compromises and trade-offs among different environmental and development objectives; and developing up-to-date information on ecosystem conditions and the processes that sustain them.

The Africa Strategy places a high priority on creating an enabling environment that motivates and enables large numbers of people and diverse institutions to manage and protect the environment. The essential elements include a broad consensus on environmental and sustainable development objectives; policy, regulatory/legal, and institutional frameworks to support these objectives; and mechanisms to monitor results and use them in decisionmaking. To improve the effectiveness of our support for environmental management, the Bank must focus on reversing the incentives that currently drive people, individually and collectively, to destroy or degrade the environment, and on providing the essential technical and institutional tools for environmental stewardship. For example, government policies often encourage the destruction of natural habitats by awarding land rights to people who "improve" these areas by converting them to agriculture and other uses. In the Burkina

Faso PRONAGEN project, local communities will become the managers and custodians of key wildlife areas and will receive both assistance and direct incentives for good stewardship.

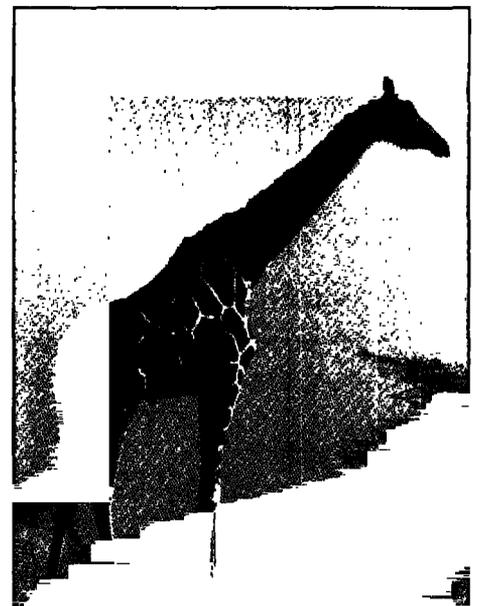
Lack of adequate resources to promote, implement, and monitor the impacts of environmental action is a perennial constraint to improving environmental management. Bilateral and multilateral assistance for environmental management and protection will continue to be important in Africa, particularly in relation to global environmental objectives, but it must be complemented by other mechanisms, including revenue generation and greater private sector investment. Key objectives include generating sustainable funding for environmental management through supporting policy reforms that create an enabling environment for environmentally sound investment; introducing and refining user fees, taxes, penalties, and other economic and market-based instruments; targeting Global Environment Facility funding for activities that address both national/local and global priorities; enhancing African countries' access to markets for global en-

vironmental services; and supporting the development of long-term financing mechanisms such as trust funds. A number of recent projects include components to establish trust funds or revenue generation mechanisms to ensure the sustainability of biodiversity conservation and other environmental objectives (for example, the Malawi Mulanje Mountain Conservation Trust). Several initiatives are also under development to mobilize investments for carbon sequestration through forest management, reforestation, and improved land management—for example, under the Integrated Land and Water Management Action Program in Africa (see *Box*, page 27).

Implementing the Strategy

While environmental management is a long-term undertaking, urgent action is needed to stem ongoing environmental degradation and to prevent further degradation resulting from poorly conceived or implemented activities. Such actions include:

- Improving the application of Environmental Assessments and



Tanzania

J. & K. Macdonald

other environmental and social safeguards, particularly by increasing attention to implementation and monitoring and by moving assessments “upstream” into planning processes through Strategic Environmental Assessments

- Moving toward longer-term programmatic operations that combine concrete, substantive goals for improving environmental quality with a flexible approach to implementation.

In-country capacity building will continue to be a main focus. Specific activities at the regional and country levels will include building in-country capacity for environmental management, including strengthening of EA legislation, application, and monitoring; training and strengthening employment opportunities for local environmental professionals; and environmental support programs that focus on strengthening environmental planning and action within sectoral agencies and at the community level. Examples include the Uganda Environmental Management Capacity Building

IMPLEMENTING INTEGRATED COASTAL MANAGEMENT IN SUB-SAHARAN AFRICA

The Africa Region has developed a process to identify promising opportunities for integrated coastal zone management projects. The process involves screening of countries based on “first order criteria” such as political stability; a high level of dependence on coastal resources; use or potential use of coastal and marine resources; and a substantial threat to these resources. Candidate countries are then ranked based on “second order” criteria such as country commitment, availability of partners, and external assistance through existing World Bank or other donor-financed programs. Identifying and designing specific interventions calls for an evaluation of “third order” criteria such as clarity of property rights regimes, existence of incentives for and against sustainable use of coastal and marine resources, and the level of local capacity. Global criteria—that is, the global significance of certain marine and freshwater coastal areas—are also significant, in part because of the opportunity to mobilize GEF co-financing. Another important consideration is the opportunity to enhance sub-regional integration through collaborative management and development of shared coastal resources.

Countries with priority integrated coastal management initiatives include the Seychelles, South Africa, Mozambique, Mauritius, Madagascar, and Ghana. Countries where integrated coastal management needs are urgent and complex, but where the “institutional core” is not as strong, include Senegal, the Gambia, Tanzania, Nigeria, Kenya, Namibia, Cote d'Ivoire, Guinea, Benin, and Guinea Bissau.

Project, the Malawi Environment Management Project, the Burkina Faso Community Support Program, the Madagascar Environment Program, the Nigeria Micro-Watershed and Environmental Management Program, and many others.

Over the long term, effective environmental management requires building environmental objectives, actions, and targets into country and sectoral strategies and operational programs. This requires providing the information needed to inform and persuade decisionmakers that addressing environmental and related social concerns is essential to development; identifying realistic development options and spelling out the costs, benefits, and trade-offs involved; and providing the tools to support implementation of environmentally favorable options. Priority will be given to countries where there are strong and clear linkages between environmental improvements and poverty alleviation, demonstrated interest on the part of clients and

Country Teams, and substantial Bank involvement.

Key activities will include developing and piloting tools and models for country-specific analysis of environmental conditions, issues, and opportunities; enhancing environmental sustainability in key sectors by improving incentive structures; and developing meaningful and practical indicators for assessing environmental conditions and trends, environmentally related poverty impacts, and the extent to which environment is integrated into development planning and operations. For example, a major study in Nigeria will analyze environmental degradation, impacts on poverty, and options for harmonizing sectoral priorities. A similar analysis in the Democratic Republic of Congo will focus particularly on environment/health linkages.

Strategic partnerships will be vital to the implementation of the Strategy. In addition to traditional partners such as bilateral donors and international NGOs, the

GEF IN AFRICA — INTEGRATION, DIVERSIFICATION, AND QUALITY

The Global Environment Facility (GEF) portfolio in Africa has grown over the past few years and become more diversified. Land degradation, the highest priority environmental issue for most African countries, provides an important entry point. The newly launched GEF-financed Africa Integrated Land and Water Management initiative will support strategy development, capacity building, and pilot operations in at least six countries. Programs that can link global and local issues, such as community-driven development, are under preparation in countries such as Burkina Faso and Niger.

The Africa Global Environmental Coordination Team is responsible for monitoring and evaluation of the Region's portfolio. During the past year, the Coordination Team has piloted video debriefing sessions as a means of capturing experiences, lessons, and good practice from project preparation and implementation.

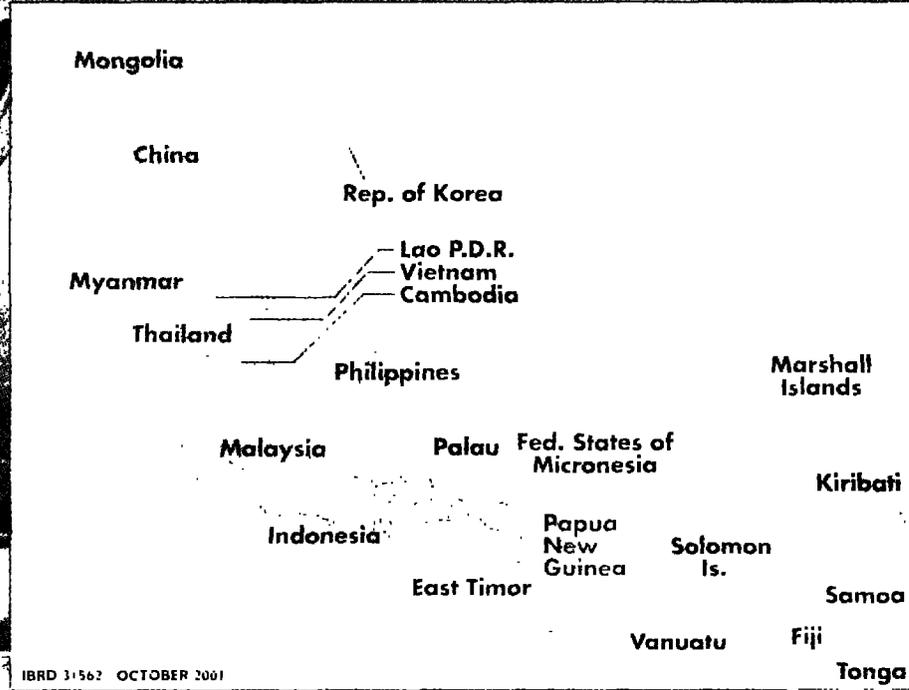
Bank will continue to explore the potential for collaboration with the private sector in areas such as technology development and transfer, specialized training and information exchange, and environmental cleanup.



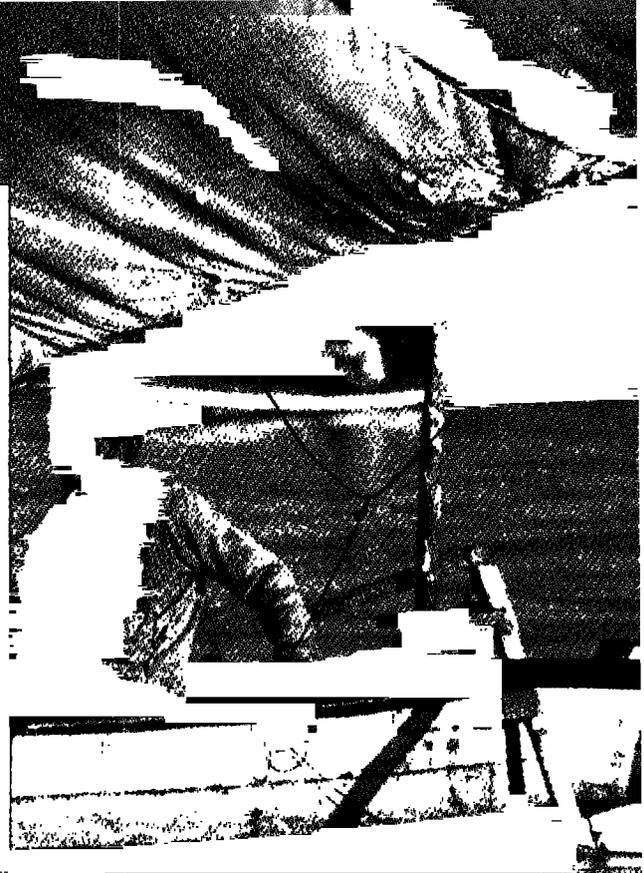
C. Garmenak

Collecting water in Senegal. Lack of access to clean water supplies and sanitation is an environmental health risk affecting millions of the region's poor.

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IBRD 31562 OCTOBER 2001



— Indonesia

ountries in the East Asia and Pacific Region have two distinguishing features with important environmental

implications: high population densities and relatively rapid rates of economic growth. The region, now home to 1.8 billion people, is expected to reach 3.1 billion by the year 2015. Nearly two thirds of the region's people live in rural areas, with farming or other resource-dependent occupations as their primary means of livelihood. But the share of the population living in urban areas is rapidly increasing. Between 1980 and 1998, the urban population nearly doubled from 310 to over 600 million people, placing additional strains on the environment.

Notwithstanding the economic crisis that occurred during the 1990s, the region experienced the fastest rate of economic growth in the world over the past 25 years. In some respects, this growth created the potential for benefiting the environ-

ment by introducing cleaner technologies and generating new sources of revenue for addressing environmental externalities. However, rapid industrialization and an expanding urban population have so far outpaced the ability of new technologies and pollution control investments to reduce overall pollution loads, resulting in deteriorating air, water, and solid waste pollution in many countries in the region.

Air and water pollution stand out as the region's most serious and economically costly environmental issues. More than 500,000 infants die each year as a result of waterborne diseases linked to polluted water. About 60 percent of these deaths are attributable to deficient rural water supplies, while another 30 percent are caused by the lack of sanitation in urban areas. These impacts are equivalent to shortening the average life expectancy of everyone in the region by nearly two years. In addition, damages from air pollution are serious in many large cities in the region—including Jakarta, Manila, and Bangkok—and are extremely costly in China, where air pollution is esti-

mated to cause over 200,000 premature deaths annually. In some cities in the region, it is estimated that total health damages are equivalent to 20 percent of annual income.

In many parts of the region, natural resources are deteriorating and are under growing pressure. Though more difficult to measure than pollution costs, the stakes are high, since they involve the sustainability of key natural resource-based activities—such as agriculture, fishing, and forestry—and of human settlement patterns. In the early 1990s, deforestation rates in East Asia were the highest of any region. Indonesia alone lost about 20 million hectares of forest cover between 1985 and 1997. Since the 1960s, the Philippines has lost nearly 90 percent of its productive old-growth forests. In the Pacific Island nations, marine ecosystems are being progressively destroyed. Climate change could exacerbate many of these problems and is a major threat to small islands, coastal areas, and dryland and non-irrigated agricultural systems.

The Bank's record and future challenges

In the EAP Region, the Bank has been active in three main areas: (1) environmental institutional development; (2) urban environment and industrial pollution control; and (3) natural resource management.

Environmental Institutional Development. The Bank has provided technical assistance to strengthen national environmental agencies in the region. Through their role as implementing agencies for Bank-supported environmental projects, many provincial and municipal agencies—in the areas of transport, construction, and utilities, as well as environment—have improved their technical, financial, and assessment capabilities in the environ-

ment field. Examples include the Yangtze Basin Water Resources Development Project and Huai River Development Project in China, and the Java Water Irrigation and Water Resources Management Project in Indonesia. To be effective over the long term, the Bank's support for environmental capacity must emphasize strengthening local environmental systems, community participation, environmental education, and the importance of institutions other than environmental agencies to promote policy reform and follow-through on implementation. Institutional capacity building is a necessary component of overall environmental improvement and must be done in tandem with environment and policy development, environmental infrastructure investments, and awareness raising.

Urban Environment Pollution Control. The Bank has been an important source of finance for environmental infrastructure in the region. In the sanitation sector in countries such as China and the Philippines, the Bank has promoted the creation of autonomous water and wastewater companies and the establishment of water and pollution charges, both to help reduce pollution and to finance operation and maintenance to guarantee long-term sustainability. Water pollution investments have predominantly been for the provision of clean drinking water supplies, sanitation, and drainage. Future public investments for water and air pollution management will depend on solving recurrent financing issues, which in turn requires political commitment to the adoption and reform of environmental and resource policies.

Natural Resource Management (NRM). Despite more than a decade of attention, policymakers in the region are just beginning to recognize the importance of NRM issues to sustainable economic development. Most Country Assistance Strategies

(CASs) have not been effective in highlighting the macroeconomic, policy, and institutional factors that affect a country's environmentally sustainable development. Over the past 10 years, the Region has prepared strategy studies on forestry, watershed management, and biodiversity. Some studies, including those for the Philippines, Indonesia, and Vietnam, have been instrumental in shaping natural resource management programs in those countries. While many agricultural development projects have been successful in raising farm-level incomes, they have not generally been effective in promoting sustainable NRM. The challenge is to redirect rural development initiatives away from individual agricultural production projects toward sustainable NRM.

Strategic priorities and actions

In three areas—the quality of life, quality of growth, and quality of the regional and global commons—the Bank can simultaneously promote poverty reduction and environmentally sustainable development in the region.

Quality of Life. Nearly all client countries are experiencing severe water pollution-related health problems. New and increased support for urban sanitation and drainage investments and for rural and peri-urban water supply and sanitation activities is envisaged in most countries in the region. Fine particulates, produced primarily from fuel combustion, are a growing concern in nations such as China, Indonesia, the Philippines, Thailand, and Vietnam. The Bank is supporting a number of cost-effective solutions to address this issue within the East Asia Clean Air Initiative (see *Box*, page 30). In the transport area, interventions include switching to unleaded gasoline; improving fuel quality; introducing cleaner ve-

ENVIRONMENTAL PARTNERSHIPS

To help countries in the region to address major environmental concerns, the Bank is developing a number of formal and informal partnerships. Several forestry activities are under way as part of the World Bank/WWF Forest Alliance, while the World Bank-Nature Council-Birdlife International partnership focuses on major biodiversity concerns. Under the Clean Air Initiative, the Bank will collaborate with multilateral and bilateral donors, the private sector, and regional governments to share effective air quality lessons. The World Bank-Korea Knowledge Partnership is designed to share Korea's environmental experience with other countries in the region. Currently focusing on industrial pollution abatement and environmental management, this partnership could expand to cover other issues of importance in the region.

hicle technologies and improved maintenance and inspection; and promoting urban planning that is less traffic-intensive.

Better management of natural resources is essential for safeguarding rural livelihoods in the region. Effectively addressing these issues requires a long-term and concerted effort, including integrating natural resource policy within macroeconomic policy and agricultural development agendas of national governments. A priority for the Bank is to identify critical NRM issues in countries of the region, and ensure that policies that support sustainable resource management are incorporated within the CAS/CDF/PRSP processes, as in the case of Indonesia, Mongolia, Thailand, and Vietnam. Aside from the "5 million hectare" afforestation program in Vietnam, the Bank will primarily support smaller-scale community forestry programs, with an emphasis on conservation and sustainable forestry development. A resumption of Bank support to the forestry sector in Indonesia is dependent on progress on two issues: broadening the dialogue on forestry

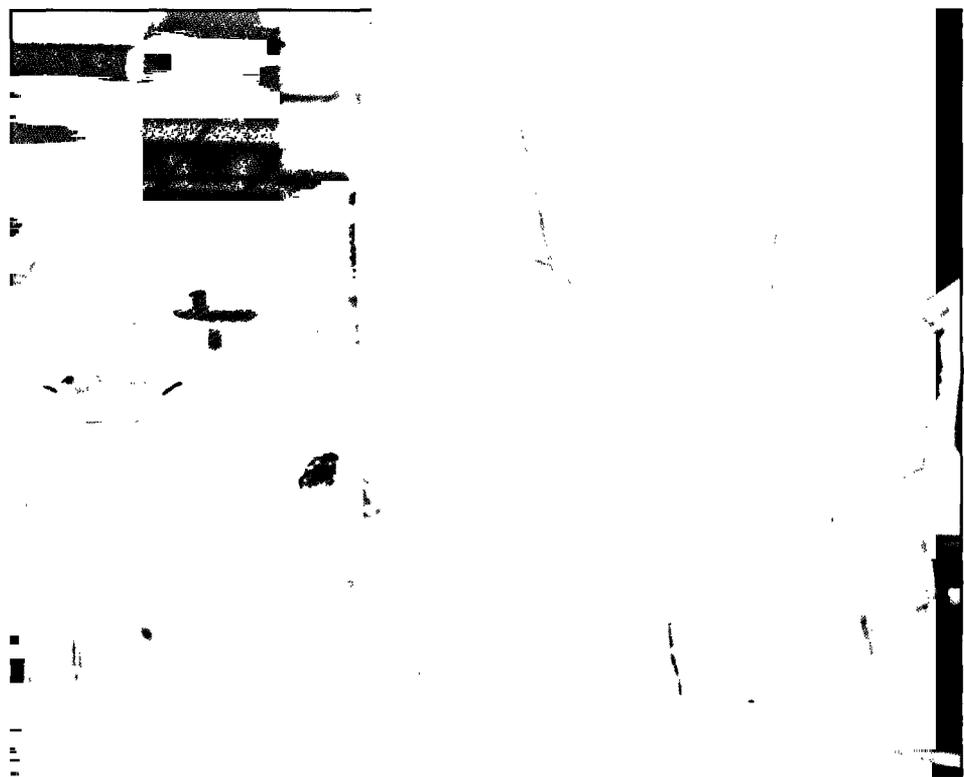
policy and management to non-forest agencies, and delegating management authority over degraded forests to parties outside the forestry bureaucracy, such as local communities, NGOs, the private sector, and other natural resource agencies.

Reducing vulnerability to natural disasters is a critical issue in the region. The Bank has provided support for relief and reconstruction following floods, volcanic eruptions, and earthquakes in nations such as Cambodia, China, and Mongolia. Moving from curative to preventive actions, the Bank plans to become more involved in addressing long-term risk reduction and mitigation measures as part of its advisory assistance and investment operations.

Quality of Growth. In the macroeconomic and sector policy arena, the Bank will promote policy reforms that improve natural resource use and reduce pollution externalities. In addition to investment

projects, the Bank can also promote environmentally sound policies within the context of sectoral adjustment loans.

In nations such as China, the Philippines, and Thailand, the Bank continues to provide support for environmental assessment, strengthening local environmental planning and regulatory capacities, and improving environmental financing. In addition, the Bank is actively promoting new approaches in environmental regulation through both lending and non-lending activities. Public disclosure of environmental information is a promising way to encourage pollution prevention and abatement and publicize the environmental performance of industrial enterprises (see *Box*, page 31). Furthermore, recent reviews of the Bank's safeguards record indicate that increased attention needs to be paid to building up local environmental management and environmental assessment capacity, improving public consultation, and integrating environmental and social assessments.



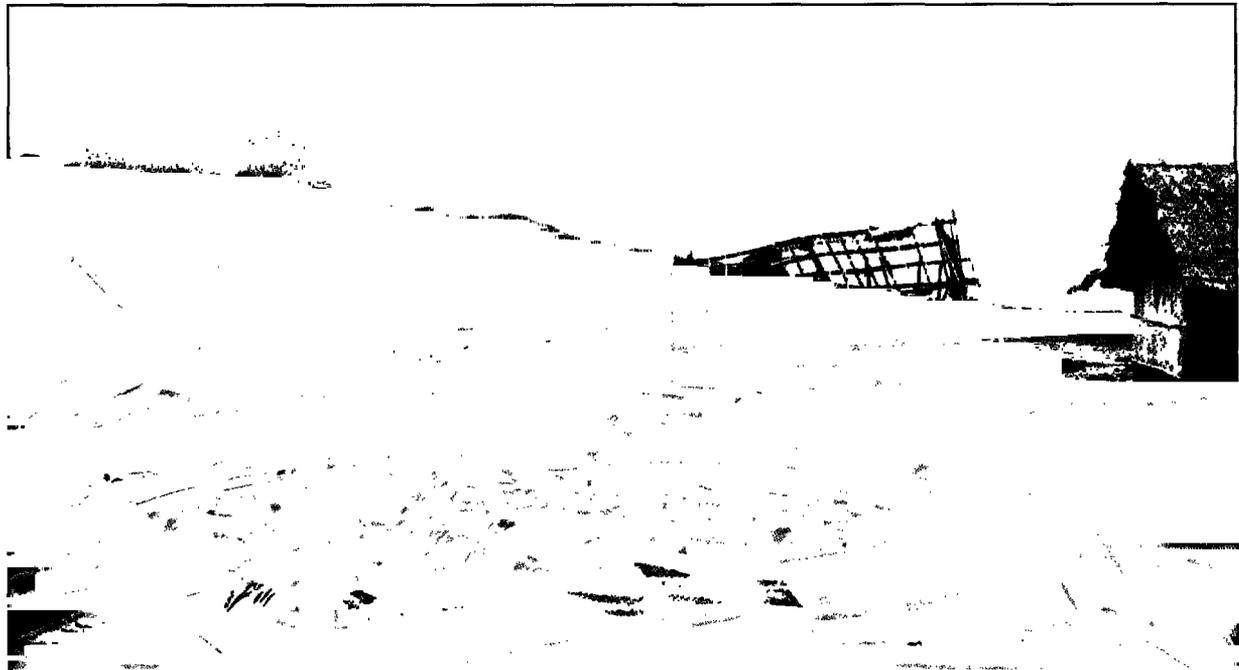
A two-stroke engine, three-wheel motor vehicle. China.

C. Carretero

Quality of the Regional and Global Environment. As a multilateral institution, the Bank can play an important role in helping address regional environment issues, such as river basin management and acid rain. Some of these issues have already gained the attention of policymakers in the region. GEF recently approved support for the

Mekong River Commission to establish mechanisms to promote and improve coordinated and sustainable water management, including reasonable and equitable water utilization by the countries of the Basin; and to protect the environment, aquatic life, and the ecological balance of the Basin.

In the climate change area, the Bank will support energy efficiency and fuel switching through GEF and other concessional resources that build on lessons learned through the Asia Alternative Energy Pro-



A coastal village in Indonesia damaged by both an earthquake and a tsunami.

gram and operations like the Thailand Chiller Replacement Project. New operations are planned for Cambodia, China, Mongolia, the Philippines, Thailand, and Vietnam.

In the face of serious threats to ecosystems and biodiversity in the region, the Bank has developed an extensive portfolio of biodiversity projects, most of which take an ecosystem approach to conservation and are focusing on biodiversity management, both within protected areas and beyond their boundaries into the

production landscape. The Kerinci-Seblat National Park Integrated Conservation and Development Project is a sound example of this approach, and similar initiatives are underway in Vietnam, and the Philippines.

Supporting the phaseout of ozone-depleting substances is a continuing priority. Currently, there are phase-out projects for ozone-depleting substances (ODS) in China, Indonesia, Malaysia, Thailand, and the Philippines. The regional program, particularly the one in China, has moved from a project-level to a programmatic approach, allowing a more systematic and comprehensive phaseout from all the key contributing sectors. Furthermore, given the region's intensive industrialization and widespread use of agricultural chemicals, there are plans to develop a major program to address persistent organic pollutants (POPs).

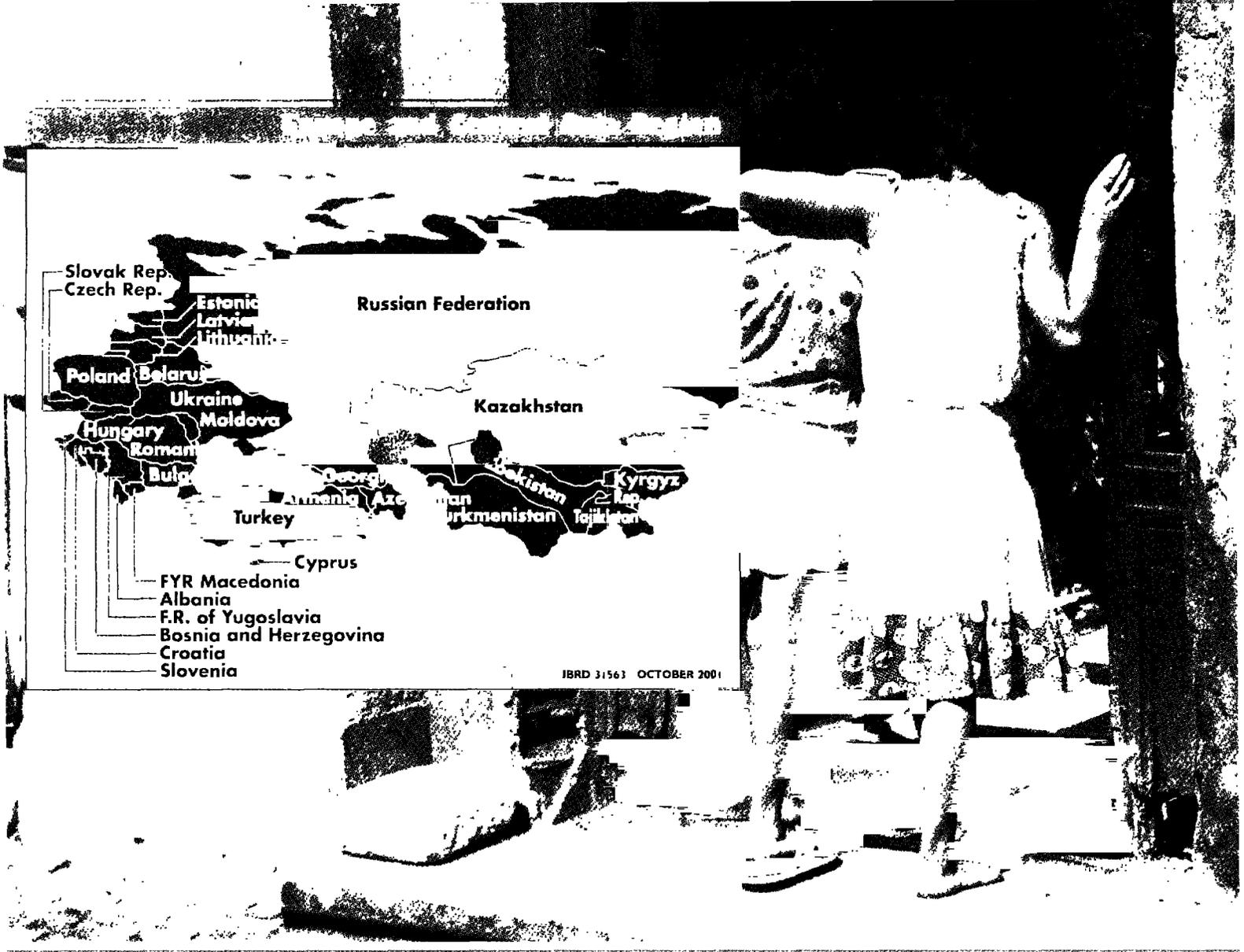
MONITORING ENVIRONMENTAL TRENDS IN EAST ASIAN COUNTRIES

Making information on environmental trends accessible to decisionmakers and to civil society is essential to informed public debate on environmental issues. The Environment Monitor series, initiated in 1999, aims to present available information on key environmental trends in East Asian countries. The Monitors use charts, graphs, and explanatory text to follow trends in various environmental indicators such as air and water quality, deforestation, and waste management. As far as possible, the Monitors describe both current conditions and trends over time.

Environment Monitors have been prepared for the Philippines and Thailand. Similar efforts will be undertaken in Cambodia, China, Papua New Guinea, and Vietnam.



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Regional and environmental context

The 27 countries in the Europe and Central Asia Region are all in various stages of transition from centrally planned economies, with the exception of Turkey.

The pace of environmental improvements also varies, in part because of the different nature of environmental issues facing these countries and in part because poverty rates are widely divergent, from below 10 percent in countries in Central Europe to 68 percent in Tajikistan. Civil conflicts, natural disasters, refugees, and ethnic problems are major complicating factors in Central Asia, the Balkans, and the Caucasus.

Regional Divergence. Environmental challenges vary within the region. Environmental challenges from past liabilities remain an issue in highly polluting industries such as chemicals, pet-

rochemicals, and metallurgy. Water supply and water resource management are the over-riding priorities in Central Asian countries and Azerbaijan, in part due to the collapse of the Soviet-era system of canals and dikes. Severe soil salinization is also a legacy from this system and requires improved irrigation and drainage management. Reducing agricultural and industrial pollution, restoring wetlands, and improving wastewater management are priorities throughout the region. Biodiversity is also under pressure from infrastructure development and illegal logging and poaching. Forest resources and their management are also critical. Russia, for example, has 22 percent of the world's forests and 18 percent of OECD's greenhouse gas emissions. The cost of meeting European Union (EU) environmental requirements is an issue for the EU accession countries.

Reforms are Critical. The ability to address environmental issues is closely linked with progress in implementing important structural reforms, such as:

- Privatizing the consumer and industrial sectors, promoting free trade, and other measures that establish fiscal and macroeconomic stability and help promote the efficient use of resources
- Assessing the real costs of water supply and tradeoffs between energy and agriculture; introducing better water management and irrigation practices; rehabilitating irrigation schemes, and making water users pay to maintain them
- Reforming municipal water and sewerage and solid waste utilities, including eliminating subsidies and raising tariffs
- Introducing incentives for efficient energy use, eliminating fuel subsidies, making the energy sector competitive, promoting lead-free fuel, introducing metering, and otherwise reforming district heating companies
- Introducing more cost-effective and sustainable natural resource management practices
- Establishing basic environmental protection and management systems, and ensuring public participation in environmental issues.

The political dynamics in the region frequently impede such reforms. For example, municipalities are often reluctant to eliminate energy and water subsidies or raise tariffs, despite deteriorating infrastructure and evidence of tremendous waste that threaten access to clean water in many urban areas. Politicians fear their constituents cannot afford rate increases, even though evidence suggests that much of the population could do so. Wage arrears, barter payments, lack of metering, and the relative insolvency of many municipalities also complicate utility reforms. As a result, privatization with effective regulation is proving more successful than attempts to reform municipal enterprises.

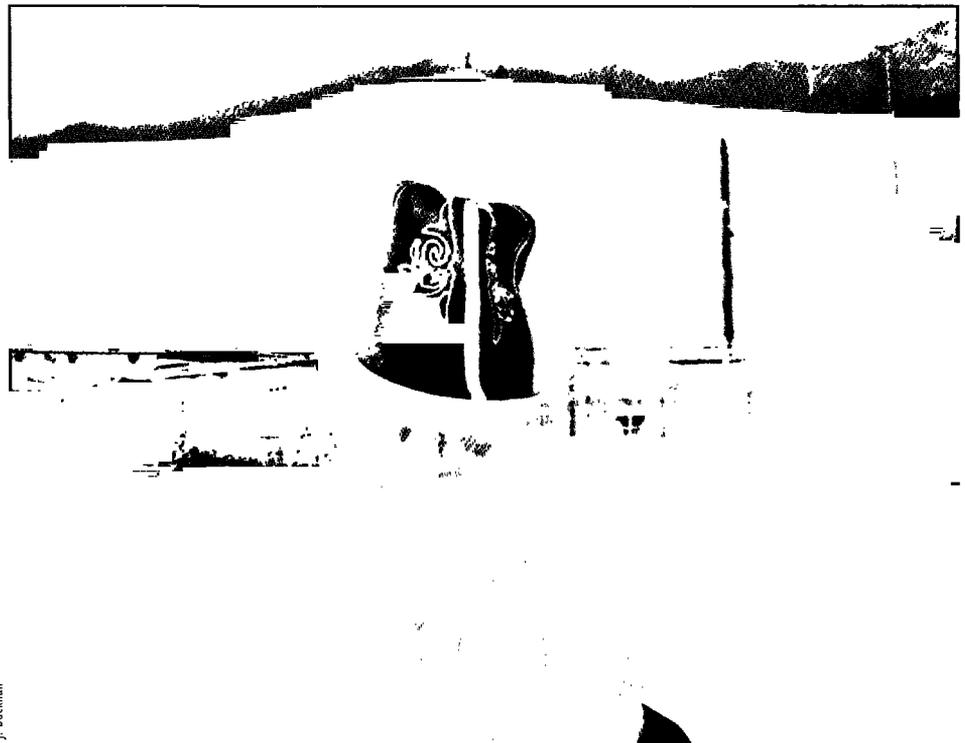
Energy Availability. Lack of domestic energy supplies is driving a rush for new strategic alliances, and generating proposals for new oil and gas pipelines that raise environmental concerns associated with construction and potential oil spills. In energy-rich countries, such as Russia or Kazakhstan, the desire to maximize export earnings of oil and gas places renewed pressure on domestic users to burn dirtier fossil fuels, particularly coal. For energy-poor countries, the increasing prices of energy inputs, together with the absence of reforms at the distribution level, has led to the collapse of district heating plants, the burning of alternative dirtier fuels, and the installation of less-efficient small boilers.

Government Commitment. Although most countries in the region have a relatively good legal and regulatory framework for environmental management, institutional capacity to implement and enforce regulations is weak, and government of-

ficials do not always agree on the importance and urgency of environmental issues. On the positive side, increasing freedoms have led to an increasingly vocal and influential civil society, including NGOs and independent journalists, who are pressing for these laws to be followed.

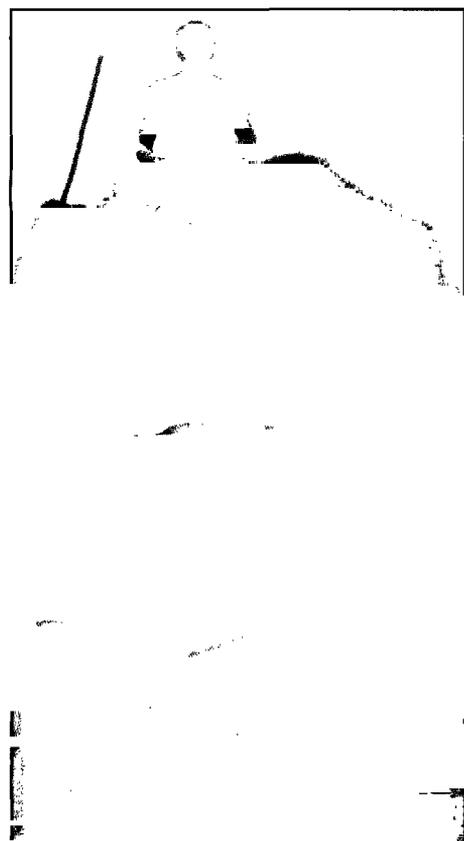
The regional environment strategy

The Bank has developed a regional Environment Strategy for Europe and Central Asia, based on extensive consultations with stakeholders in client countries, other international organizations, and the donor community. The consultations helped achieve consensus on environmental priorities, including the need to link environmental issues to poverty and health and to the general reform agenda. Individual country strategies are tied to localized environmental issues as well as broader macro and reform agendas.



Participatory studies to understand the perspectives of users of natural resources including, in this case, irrigation water. Kyrgyz Republic.

To improve the quality of life, the regional environment strategy will work to improve access to safe drinking water and sanitation; mitigate health threats from industrial accidents and toxic substances; support conversion to less polluting heating fuels, more efficient heating, improved traffic management, and reduced power emissions; improve livelihoods through support for sustainable forests, watershed management and energy conservation; and improve security by planning for and mitigating natural disasters. For example, the Kosovo Pilot Water Supply Project and the Russia Municipal Water and Wastewater Project are aimed at ensuring the availability of water and wastewater services to urban populations while implementing institutional and commercial reforms to improve their longer term sustainability. In Moscow, a



— Croatia

M. Lisinin

newly approved Urban Transport Project will address traffic management and rehabilitate bridges, which should contribute to the reduction of transport emissions. A project to assist Turkey to recover from the Marmara Earthquake includes support to help Turkey better plan for earthquakes, mitigate their consequences, and recover more quickly afterwards.

To ensure the quality of growth, the strategy will focus on integrating environment into macro and sector policies; building local capacity to assess the environmental impact of policies; strengthening legal and regulatory frameworks and environmental review capacity; and improving the framework for private investment through helping governments address environmental liability in the context of privatization. For example, the Bank is supporting environmental reforms and assisting the Government of Bulgaria to help newly privatized companies comply with environmental laws and clean up environmental liabilities created prior to their privatization.

To improve the quality of the regional and global commons, the strategy will help reduce greenhouse gas emissions; support biodiversity conservation with the participation of local communities; improve management of international waters; complete the phaseout of ozone-depleting substances; and begin to address broader resource degradation and desertification issues. Projects to end the use of ozone-depleting substances are under way in Poland, Belarus, and Russia (see *Box*, at right). Several forestry projects address desertification, among other problems (see *Box*, top of next page). The region has four important seas where improved transboundary cooperation and improved management are needed: the Aral Sea, the Caspian, the Black Sea,

and the Baltic Sea. We have ongoing projects in each of them. The Bulgaria Wetland Restoration and Pollution Reduction Project, for example, aims to help reduce transboundary nutrient loads and conserve biodiversity in the Danube and Black Sea Basins through improved management and sustainable use of water resources and restoration of wetlands, some of which were former floodplains (see *Box*, bottom of next page). In Latvia, the Liepaja Region's Solid Waste Management Project includes measures to utilize landfill gas for electricity generation. The resulting reductions in greenhouse gas emissions will be partly sold to the Prototype Carbon Fund (PCF), making this the first project financed with PCF assistance.

The regional environment strategy is being supported through a number of stud-

SPECIAL INITIATIVE FOR OZONE DEPLETING SUBSTANCES PRODUCTION CLOSURE

Russia has traditionally been one of the world's largest producers of ozone-depleting substances (ODS). In 1998, its production capacity represented almost 50 percent of global capacity still active. The World Bank's Special Initiative for Ozone Depleting Substances Production Closure brings together 10 donors and the GEF to help close all ODS production in the Russian Federation. Under the project, the Bank provided a grant to the Russian Federation, which in turn provided payments to the enterprises as partial compensation for costs associated with closing ODS production, based on clearly defined and verifiable outcomes. All ODS production in Russia was terminated by December 20, 2000. As of June 2001, closure activities at all enterprises are substantially complete, such that they no longer have the capacity to produce ODS. Closure Verification Reports are under preparation and final compensation payments, subject to the Bank and Donor expert panel verification, are anticipated in the fall of 2001.

THE STRATEGIC PARTNERSHIP ON THE BLACK SEA AND DANUBE BASIN

The environment of the Black Sea/Danube Basin has degraded drastically over the past four decades, due to untreated wastewater discharges from industry and towns, excessive use of pesticides and fertilizers, land use changes, inadequate management of animal waste, oil spills, introduction of alien species, and overfishing. Environmental contamination has caused significant losses to riparian countries through reduced revenues from tourism and fisheries, loss of biodiversity, and increased water-borne diseases. Over-fertilization ("eutrophication") of water bodies by nitrogen and phosphorus discharges from municipal, industrial, and agricultural sources was the most significant cause of this ecological near-disaster.

The GEF Strategic Partnership on the Black Sea and Danube Basin was established by the Global Environment Facility (GEF), the World Bank, the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP). The goal of the Partnership is to return the Black Sea environment to its 1960s level. Clearly, reaching this goal requires cooperation by all stakeholders, including governments, national and international NGOs, international organizations, private sector organizations, and citizens of the region. The backbone of the partnership is the World Bank GEF Investment Fund for Nutrient Reduction in the Black Sea/Danube Basin, to help finance investment projects in industrial and domestic wastewater treatment, wetland restoration, and environmentally friendly agriculture. A GEF grant of \$29 million for the project will be invested during the first two years of a six-year, multi-tranche program.

ALBANIA: COMMUNITY-BASED FOREST MANAGEMENT IN A TRANSITION ECONOMY

Forests cover 38 percent of Albania's land area, with broad-leaved forests—mainly oak and beech—predominating. Fuelwood accounts for over 40 percent of recorded timber production. Pasture land covers 15 percent of land area, and 60 percent of the population is dependent or partially dependent on pastoralism. Forest and pasture land are owned by the state. Since 1990, Albania has moved rapidly with market-based reforms, but there have been increasing problems of governance and law and order, including illegal timber harvesting.

The Community-based Forest Management Project aims to restore degraded state-owned forest and pasture areas and promote their sustainable use; promote conservation of natural forest ecosystems; and initiate a transition of the forestry/pasture sector to a market economy, separating commercial from regulatory functions and establishing mechanisms for self-financing of the commercial activities. In addition to assisting with improving forest management at the local level and reorganizing the forest sector institutions, the project is improving trade, marketing, and pricing policies to enhance revenue; implementing an action plan to reduce illegal harvesting, in collaboration with local governments and the Ministry of Finance Tax Inspection; and supporting community forestry by providing local communities with legal user rights for communal and forest pastures, assistance to improve their management, and mechanisms to reinvest users fees into improved management and into training forest specialists in the public and private sector.

Because of broader poverty, law and order, and governance issues, controlling illegal harvesting and improving forest management on publicly managed land has been difficult. The transfer of user rights and management to local communities has worked well; user rights have been transferred for 10 years. Local communities have been assisted with development of management plans, and have invested user fees in improving the resource. This component is being expanded, and may form the basis for a follow-on natural resources and environment project.

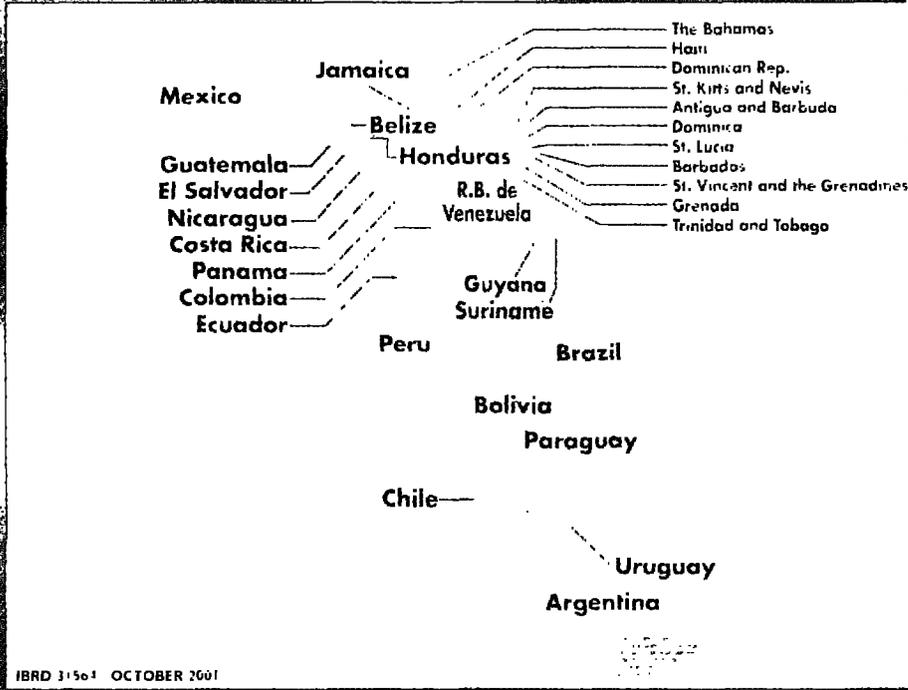
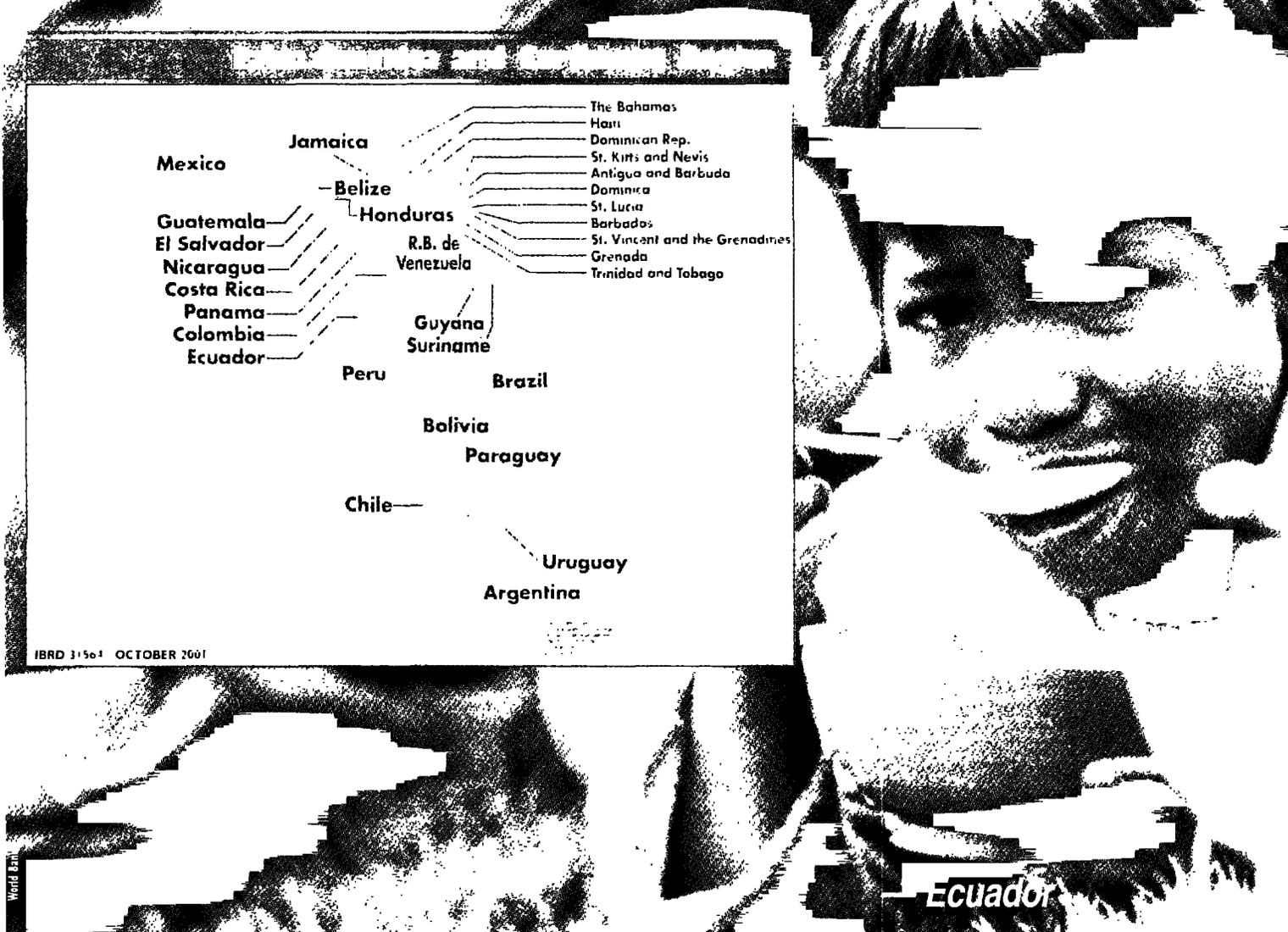
ies, including efforts to understand the links between environmental problems and health and poverty; evaluate the links between energy and environment; adopt cleaner fuels, improve traffic flows, and promote more fuel-efficient vehicles; quantify the fiscal and environmental impacts from better natural resource management, particularly forests; and link agricultural productivity and rural livelihoods to better agricultural practices and irrigation restructuring.

Throughout the region, support for capacity building is also continuing.

Implementation arrangements

Given the many linkages between environmental issues and other sectors, implementing this strategy requires strong cross-sectoral alliances with colleagues working on energy infrastructure, particularly urban water and district heating, as well as agriculture, rural development, and forestry. Social assessments will be integrated into efforts to develop rural community-based improvement projects in water supply, irrigation, and agricultural practices. Close collaboration with our colleagues in the poverty reduction and human development groups will also be required, particularly to better assess linkages between poverty, health, economic growth, structural reforms, and environment; to assess the environmental impacts of proposed structural and policy reforms; and to incorporate environmental agendas and priorities into Country Assistance Strategies (CAS). We will also increase our efforts to be selective and leverage limited resources through partnerships.

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Ecuador

he Latin America and Caribbean Region countries are characterized by economies that are increasingly in-

tegrated into the world economy; the formation of regional trading blocks such as Mercosur; a high degree of urbanization; and a deepening of democracy, coupled with a trend toward increasing decentralization and improved governance. The key environmental issues in the region include (a) urban-industrial pollution; (b) mismanagement of natural resources in areas of both existing and new settlement, and the consequent loss of both terrestrial and marine biodiversity; and (c) high vulnerability of urban and rural populations to natural disasters.

The World Bank prepared an environment strategy for the region during 2000-2001 with inputs from a wide variety of stakeholders. The strategy, which reflects the considerable

heterogeneity in social and economic conditions within the region, both within and across countries, seeks to support short-term poverty alleviation without compromising long-term sustainability. Its key development objectives are (a) enhancing livelihoods and reducing vulnerability through sustainable natural resource management; (b) improving health conditions affected by environmental factors; (c) developing appropriate enabling frameworks for sound environmental management; and (d) facilitating equitable solutions to regional and global challenges.

Enhancing livelihoods

To enhance livelihoods through the sustainable management of natural resources, the strategy supports efforts to identify and analyze the causes, impacts, and costs of environmental degradation and natural resource depletion. It promotes the adoption of sustainable environmental management practices to address environmental degradation and natural resource

depletion—particularly win-win activities that both improve poor people's livelihoods and reduce environmental degradation.

One focus will be on developing a better understanding of environment-poverty-economic growth linkages and trade-offs, including long-term versus short-term implications of natural resource use. The Panama Country Assistance Strategy provides an example of this approach (see *Box*, at right). As another example, the Mexico Decentralization Loan seeks to link objectives of overall accountability and transparency of fiscal transfers to improved service delivery in the health and environment sectors through decentralization.

Sustainable integrated natural resource management of land, freshwater, and marine ecosystems will be another area of emphasis. Efforts in this area will focus on highly degraded or threatened ecosystems and disaster-prone areas. In the Mesoamerican Biological Corridor, the Bank is working with a number of other donors to promote a pattern of sustainable land use that provides income opportunities from environmentally friendly options such as ecotourism, organic farming, and shade coffee.

Improving environmental health

To guide interventions in the environmental health area, the linkages between environment and health need to be identified and analyzed. Important research priorities in the region include development of health-environment project indicators, as well as studies of the economic benefits of reducing pollution. For example, a recent Bank-funded study analyzed the economic benefits of efforts to

THE PANAMA CAS AND BIODIVERSITY— TOWARD BEST PRACTICE

The fiscal 1999 Country Assistance Strategy (CAS) for Panama focuses on poverty alleviation and recognizes that this issue is particularly severe in rural areas. Consequently, one of the pillars of the strategy is environmentally sustainable development in rural areas. The proposed activities recognize that Panama is home to a very rich and unique biodiversity, and that its conservation and sustainable use are necessary elements for such development.

In the past, Panama has used Bank assistance and GEF resources to enhance its participation in the Mesoamerican Biological Corridor through strengthening its capacity to manage a large protected area system, to increase rural incomes and curtail environmental degradation, and to develop a National Biodiversity Strategy and Action Plan. The CAS emphasizes the need to take these goals further and to address land tenure issues and policy distortions that provide incentives for unsustainable use of natural resources. In addition, it identifies the need to protect the Panama Canal watershed, including the establishment of ecological reserves.

reduce emissions in the Mexico City Metropolitan Area. The study found significant economic benefits to meeting air quality standards, including as much as \$6.8 billion per year for compliance with ozone standards and \$6.5 billion per year for compliance with PM₁₀ (particulate matter) standards.

To address environmental health problems, the regional environment strategy emphasizes the need to increase the efficiency, effectiveness, and sustainability of municipal services targeted to the poor. In addition, it promotes clean industrial production, including environmental management systems in small- and medium-sized enterprises.

Reducing vulnerability

The region has experienced several natural disasters in recent years. The impact of these disasters has been aggravated by environmental degradation. In many cases, it is the poor who are most vulnerable to natural disasters. One approach to addressing these problems is to assist clients to better prepare for and respond to natural and human-induced disasters by developing early warning systems and risk management services such as insurance schemes. Recent projects that have taken this approach include the Disaster Management Project in Mexico and the Natural Disaster Vulnerability Project in Nicaragua. The Trinidad and Tobago Water Resources Management Strategy deals both with vulnerability to floods as well as with quantity and quality of water (see *Box*, below).

TRINIDAD AND TOBAGO WATER RESOURCES MANAGEMENT STRATEGY

The **Water Resources Management Strategy** has integrated several cross-sectoral issues, including the development of a water resources policy and institutional framework for the regulation of water resources; a water resources development planning framework, which will use surface water, groundwater, and desalinated water for municipal, industrial, and agricultural supply; a flood control strategy; and a pollution control and water quality management strategy.

Recommendations include:

- Implementing the concept of integrated water resources management
- Establishing an effective and financially autonomous institutional framework that facilitates efficient water resources management
- Acting to meet growing demand for water
- Protecting environmental quality and ecological systems
- Developing capacity and support tools.

largest GEF medium-sized project program in the Bank. This program has encouraged greater innovation in project design and active engagement with a wide variety of nongovernmental partners.

Given the prevalence of worldwide biodiversity hotspots in Latin America, biodiversity remains one of the region's highest global environment priorities. Interventions aimed at preserving global biodiversity are more diverse than in the past, and generally will become more integrated into projects with wider sustainable development objectives. The variety of biodiversity projects include protected areas management; sustainable use of biodiversity outside protected areas; conservation of biodiversity through indigenous peoples groups and NGOs; piloting of new economic instruments for financing and promoting biodiversity preservation; and sustainable use of natural resources in production landscapes.



C. Carriemmark

Every year, tens of millions of monarch butterflies migrate to Mexico for the winter. However, deforestation is threatening this vital part of the monarch's life cycle.

Anticipated changes in sea level will have a particularly serious impact on the sustainable development of low-lying coastal states of the Caribbean. A project financed by the Global Environment Facility (GEF) is designed to support Caribbean countries in preparing to cope with the adverse effects of climate change.

Addressing global issues

The Bank continues to place a high priority on addressing the global environmental priorities of client countries by mainstreaming global financing instruments like the GEF and the Montreal Protocol; utilizing programs supported by bilateral donors such as the Climate Change Strategy Studies and Global Overlays programs; and by actively participating in targeted partnerships like the Pilot Program to Conserve the Brazilian Rain Forest and the Critical Ecosystem Partnership Fund. The region has the



Population pressure and scarcity of agricultural land often force farmers to cultivate steep hillsides, as in this watershed in Colombia's Cauca Valley.

S. Pagliola

The Bank as a multilateral institution plays an important role in helping address regional environmental issues such as transboundary water management, resource protection, and knowledge transfer for common environmental management challenges. Examples of regional initiatives include projects focused on cruise ship waste management in the Caribbean; coral reef protection and transboundary corridor biodiversity protection in Central America; and groundwater aquifer protection and large marine fisheries management in South America, such as the Biodiversity Overlays Program in Argentina (see Box, below). The Clean Air Initiative program was established to bring together municipal stakeholders to share experience and knowledge on improving urban air pollution. In concert with the urban air program, some interventions on the transport side of the urban air pollution challenge are being tested with projects focused on land use pattern changes; modal and consumer behavior shifts; and technology upgrades.

Greater awareness of the impacts of climate change, and the need to adapt more



vulnerable areas to impacts, has created strong demand within the region for actions to address climate change and carbon emission reduction objectives. Programs are under way to promote conversions to low- or no-carbon renewable energy technologies; encourage energy efficiency investments; and promote carbon sequestration in wetlands, forests, and soils of both preserved and actively managed lands. Most climate change investments are being coupled with policy



THE BIODIVERSITY OVERLAYS PROGRAM—FISHERIES MANAGEMENT PLANNING AND BIODIVERSITY CONSERVATION IN ARGENTINA

Argentina's coastal zone represents one of the richest and most productive temperate marine ecosystems in the world. Recent studies indicate that overfishing has not only depleted local hake (*Merluccius hubbsi*) resources almost to the point of extinction, but may have also adversely affected the marine mammals and birds that feed on these fish stocks, as well as the larger marine ecosystem on which they rely. This biological diversity supports an important tourism industry along the Argentine coast. Unless the incentives that drive the fishing industry are changed, efforts to conserve this globally important marine biodiversity area are likely to fail, and the basis for a sustainable tourism industry will be undermined.

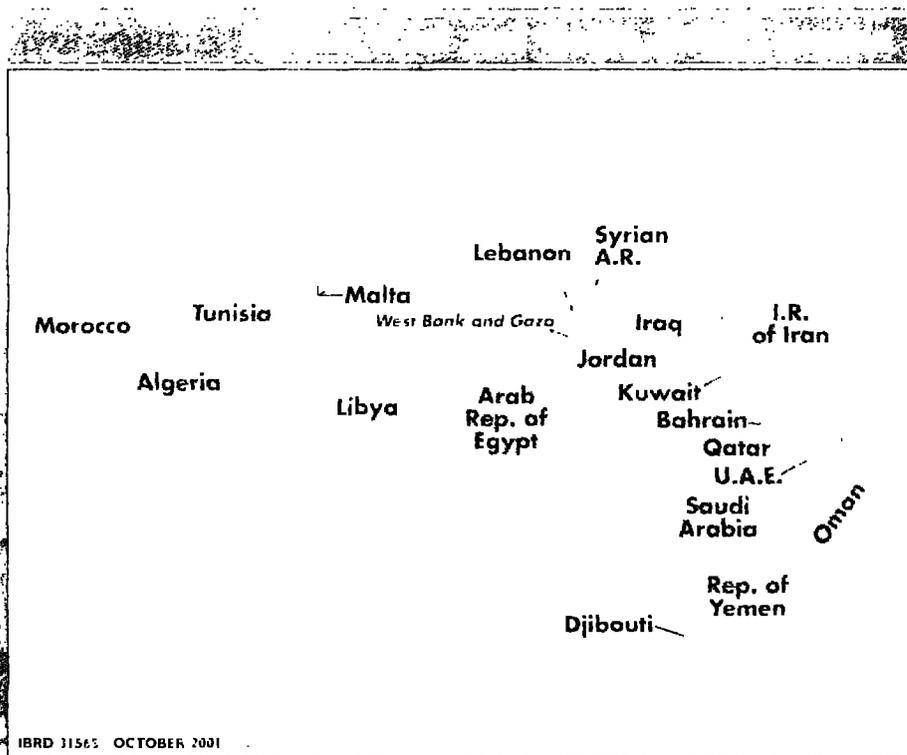
At the request of the Government of Argentina, the Bank has assisted with a study that would help evaluate the design and implementation of a fisheries management plan (Individual Transferable Quotas) to limit the fishing effort in the hake and other fisheries. An ecosystems/biodiversity overlay was added to this study to provide insights into the consequences of alternative strategies for fisheries management.

The expected major contribution of the overlay is to sensitize fishery policymakers to the need for a comprehensive ecosystems approach to fisheries management and to help identify priority research needs to effectively support such an approach.

reform measures to provide a better enabling environment for these investments, and in many cases are being targeted at under-served poorer populations (for example, off-grid rural electrification projects). The largest growth in global programs is likely to occur in the climate change area over the next decade.

Actions stemming from new international conventions on persistent organic pollutants (POPs) and biological safety in food will also begin to be mainstreamed into the Bank's agricultural and urban pollution work as global funding mechanisms are more fully defined. The Montreal Protocol Program, which has been largely successful on the consumer side in supporting technology change and institutional strengthening, will begin to shift its focus to target residual production sites, in line with similar initiatives across the world.

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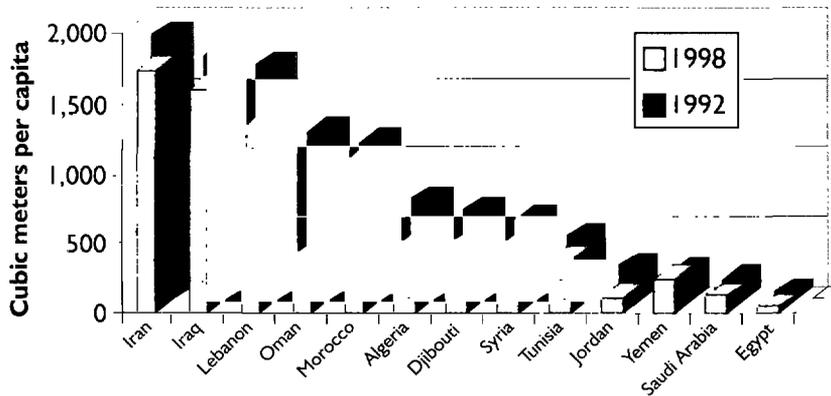
The Middle East and North Africa includes 20 World Bank client countries with a combined population of

290 million in 1999. The substantial investments made since the 1960s on health, education, basic infrastructure services, and more recently on family planning have begun to show positive results. Between 1980 and 1999, population growth declined from 3.2 to 2 percent annually; infant mortality dropped from 95 to 44 per 1,000 live births; life expectancy increased from 59 to 68 years; and secondary school enrollment increased from 42 to 64 percent. From 1987 to 1998, the proportion of the population living below \$2 per day fell from 30 to 20 percent. However, the region still faces large income gaps. On average, the richest 20 percent account for more than 45 percent of total income, while the poorest 20 percent account for less than 7 percent.

The Middle East and North Africa is the world's richest region in terms of oil and gas reserves, but the world's poorest in renewable water and arable land. It continues to rely excessively on natural resources as a development strategy. Water and oil are being tapped at unsustainable levels. The region's countries have the following longstanding environmental issues:

- *Water scarcity and quality.* Annual internal renewable water resources per capita are declining in most countries (see *Chart*, top of next page). Water allocation is a major concern for governments. In part because of efforts to increase food self-sufficiency, 88 percent of the region's water resources are allocated to agricultural use, compared to 7 percent for domestic use. The degradation of water quality is also adding to the water scarcity problem.
- *Land degradation and desertification.* Less than 6 percent of total land area is suitable for agricultural use, and serious land degradation and recurrent droughts are shrinking

Available internal renewable water resources are declining throughout the region



Source: World Resources 1994-95 and 1998-99.

this area. Unsustainable agricultural practices on rainfed lands have combined with natural factors—such as wind and floods—to cause a substantial loss of productive land and desertification.

- **Coastal degradation.** Major coastal cities are growing rapidly, and construction and pollution are placing severe stresses on fragile coastal ecosystems, a problem exacerbated by a lack of integrated coastal zone management.
- **Urban and industrial pollution.** Urban and industrial pollution causes significant public health problems in the region. The transport, industrial, and energy sectors contribute to the degradation of air quality in major urban cities. Proper solid waste disposal is largely lacking, and industrial hazardous waste is rarely treated adequately.
- **Weak institutional and legal frameworks.** Environmental problems are aggravated by weak regulatory and enforcement mechanisms. Although the region has made progress by establishing ministries of the environment and preparing environmental legislation and National Environmental Action Plans (NEAPs), these institutions are under-staffed, under-funded, and generally lack political power. Cross-sectoral linkages between ministries

and public institutions are generally weak. The role of civil society in environmental management remains limited.

More recently, the region's countries have also had to face the environmental dimensions of their own economic liberalization efforts, of their free trade agreements with the European Union, and of globalization. As countries move forward with trade liberalization and private sector development, the challenge is to assist them in these transitions while ensuring a sustainable use of their natural resources.

Regional environment strategy

The Bank first prepared a regional environment strategy for the Middle East and North Africa in 1995. This strategy was a milestone in guiding countries, the donor community, and the Bank toward promoting sustainable development in the region. During the first five years of the strategy's implementation, investments in environment-related projects totaled \$3.4 billion, including \$2.3 billion allocated to water-related projects. There was notable progress in protecting natural resources in Algeria, Egypt, Morocco, and Tunisia. Efforts to control industrial pollution are ongoing in Algeria and

STRENGTHENING EA CAPACITIES— THE METAP EXPERIENCE

To improve the business climate while achieving sustainable economic development, clear and transparent environmental regulations and legal liabilities are needed.

In 1998, METAP initiated a program to assist Mediterranean basin countries acquire the technical and policy tools necessary to establish Environmental Assessment (EA) systems. EA systems in Albania, Croatia, Egypt, Jordan, Tunisia, Turkey, and the West Bank and Gaza were assessed, and the results were used to define actions to improve national EA systems and to increase their coherence with international norms. A second phase, initiated in 2000, established an EA Center in Tunisia; extended the assessment of EA systems to Algeria, Morocco, Lebanon, Syria, and Yemen; undertook collaborative workshops; and established a network of EA directors.

A third phase is now envisaged to test the feasibility of establishing full compliance with World Bank EA procedures so that responsibility for overseeing the EA process can be shared with national governments in selected countries.

Egypt, and initiatives to reduce urban pollution are being implemented in Lebanon, Tunisia, and Yemen. In Algeria, Egypt, and Morocco, projects are under way that would strengthen environmental institutions and encourage greater public participation. The Mediterranean Environmental Technical Assistance Program (METAP), sponsored by the World Bank, EC, EIB, and UNDP, played a major role in evaluating national environmental strategies and helped establish environmental impact assessment units in various countries (see Box). Regional training helped strengthen the capacity of environmental institutions.

Over the past year, the strategy has been updated for 2001-05, based on experience gained since 1995, internal consultations, and external consultations with regional stakeholders.

The Bank's strategic priorities and actions focus on three interrelated aspects of development—improving the quality of life, the quality of growth, and the quality of the regional and global environment.

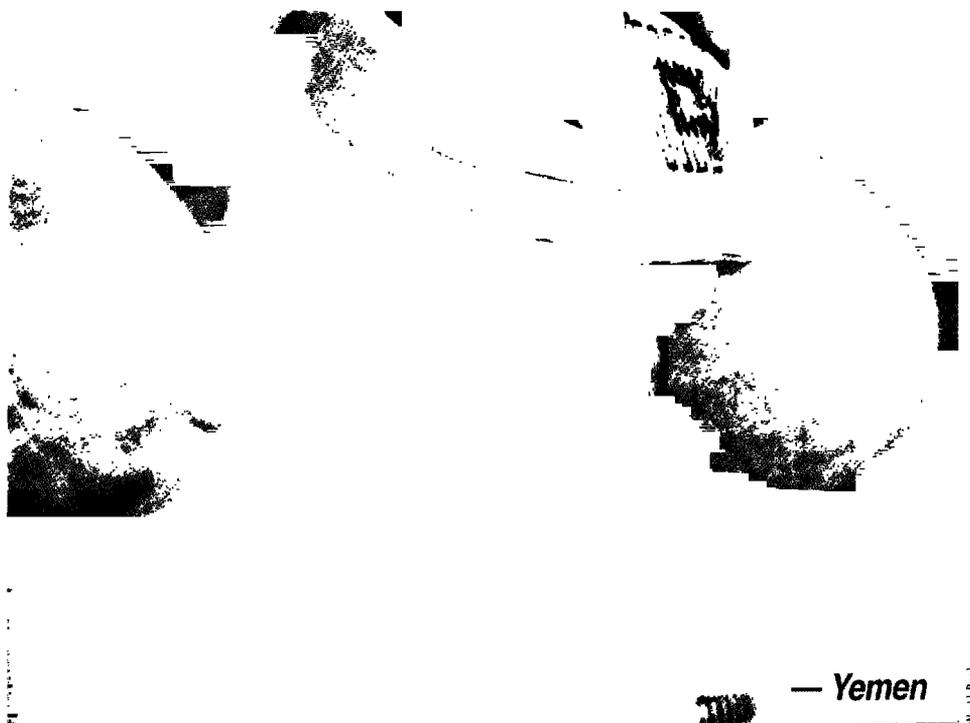
Quality of life

To help improve the quality of life, the strategy focuses on improving water resource management, controlling land and coastal zone degradation, and reducing urban air pollution.

Improving water resource management. Water scarcity and water quality stand out as particularly challenging issues in this mainly arid region. The Bank will:

- Support integrated water resource management, with an emphasis on water-use efficiency
- Finance cost-effective sanitation measures and wastewater treatment plants, and develop guidelines for water re-use as well as hygiene education activities
- Integrate a water quality monitoring and enforcement component into all water and wastewater-related projects, and strengthen the involvement of local communities in this monitoring process.

Controlling land and coastal zone degradation. The Bank will establish reliable baseline data for water and soil contamination from agricultural runoff and develop effective methods to control agricultural pollution; improve land management, and work with Bank-wide natural resources management networks to pursue a unified program on land management; and provide a framework for the participation of local communities in the management of the natural resource base. Further, the Bank will support coastal zone management strategies and programs that emphasize coordinated measures and a preventive approach to degradation.



Reducing urban pollution. In order to improve the quality of life in urban areas, the Bank will concentrate on reducing air pollution and improving waste management. In the air pollution area, the Bank's strategy is to mainstream the environment into the energy and transport sectors. It will do so by conducting energy-environment reviews; developing environmental guidelines; and encouraging the development of legal and institutional frameworks to address market failures in the energy sector. In the transport sector, the Bank will encourage the phaseout of leaded gasoline, the implementation of public awareness campaigns, and the introduction of inspection and maintenance programs for vehicles. In the waste management area, the Bank will help develop the institutional and legal frameworks necessary to support integrated waste management; introduce affordable financing mechanisms for the collection, treatment, and disposal of waste; and increased awareness and the participation of communities in all aspects of solid waste management.

Quality of growth

The Bank will support environmentally sustainable growth in the region through capacity building and strengthening the private sector. It will focus on strengthening national legal frameworks to include environment and social safeguards; improving self-monitoring and enforcement mechanisms; harmonizing national EA regulations with international norms (see *Box*, at right); working with the public and private sectors to promote clean technologies; increasing public consultation and information dissemination; strengthening the role of governance in appropriate projects; involving NGOs, civil society, women, and community leaders in the design and implementation of projects; and building the capacity of institutions to develop early warning systems and preparedness plans for floods and droughts. Activities to improve the environmental capacity of the private sector would be designed through METAP or the Development Grant Facility (DGF). Such activities would include assisting domestic banks in managing the new risks and exposures to environmental

— Yemen

World Bank

regulations; providing reasonable and transparent environmental regulations that support both environmental objectives and private sector development; and continuing the work on environment and trade already started under METAP.

Quality of the regional and global environment

To promote the quality of the regional and global environment, the Bank will continue to support its regional initiatives and will integrate global environmental issues into its operations.

The Bank's involvement in three regional programs—METAP, the Desertification Initiative, and the Regional Water Initiative—will continue. METAP will remain the major instrument for providing technical assistance to strengthen the Bank's environmental interventions. The Bank will also continue to strengthen partnerships with regional and international agencies in designing and implementing its regional initiatives.

In the global environmental area, six projects that address greenhouse gas reduction, three on biodiversity conservation, and two on coastal zone management are under preparation. New GEF Operational Programs in transport and Integrated Ecosystem Management offer new opportunities to use GEF resources in transport, urban planning, and integrated rural development projects. A more systematic approach is needed to mainstream global environmental issues

into lending and nonlending activities and assist countries in meeting their commitments under international treaties and conventions. An analysis of the lending program matched with country priorities should be conducted to estimate the potential for GEF projects, establish priorities in every country, and develop an action plan.

Implementation arrangements

Given the region's diversity, actions to implement this strategy update must be specified at a country level. Bilateral grant financing will be instrumental in accelerating the implementation of these actions.

Mainstreaming the environment. The following four tools will be used to mainstream environment into the development agenda:

1. Enhancing the quality and effectiveness of countries' environmental and social assessments by strengthening national project approval systems; introducing strategic environmental assessment of macro/micro economic policies and sector environmental assessments (see *Box*, below); and training client countries to use these assessments.
2. Demonstrating the economic importance of a clean environment by undertaking studies to assess the cost of environmental degradation (see *Box*, below), and analytical work to identify linkages between envi-

ronment and trade, environment and health, and environment and poverty reduction.

3. Integrating environmental components into targeted sectoral projects, and integrating global environment issues into the Bank's operations.
4. Developing Monitoring and Evaluation (M&E) systems and indicators to measure progress at the project, program, and policy levels. In order to support the M&E systems, environmental profiles will be developed for each country in the Region.

Partnerships. Partnerships will become an important cornerstone for the Bank's environmental assistance in the Region and for the implementation of the proposed strategy. At the country level, the Bank is prepared to participate or convene a donor-country coordination group on environment to achieve a greater integration of efforts and reduce overlaps. At the regional level, the Bank will seek collaboration between METAP activities and other regional organizations and NGO networks.

Selectivity. The Bank will re-focus some of its activities by gradually shifting from stand-alone environment technical assistance (TA) projects to integrating environmental TA components into sector operations with well-defined outputs; discontinuing the preparation of additional environment sector notes or NEAP updates; and refocusing the functions and responsibilities of the Region's environment staff toward providing upstream technical and policy support; ensuring compliance with the Bank's environment and social safeguard policies; and improving the implementation of environmental components in various projects.

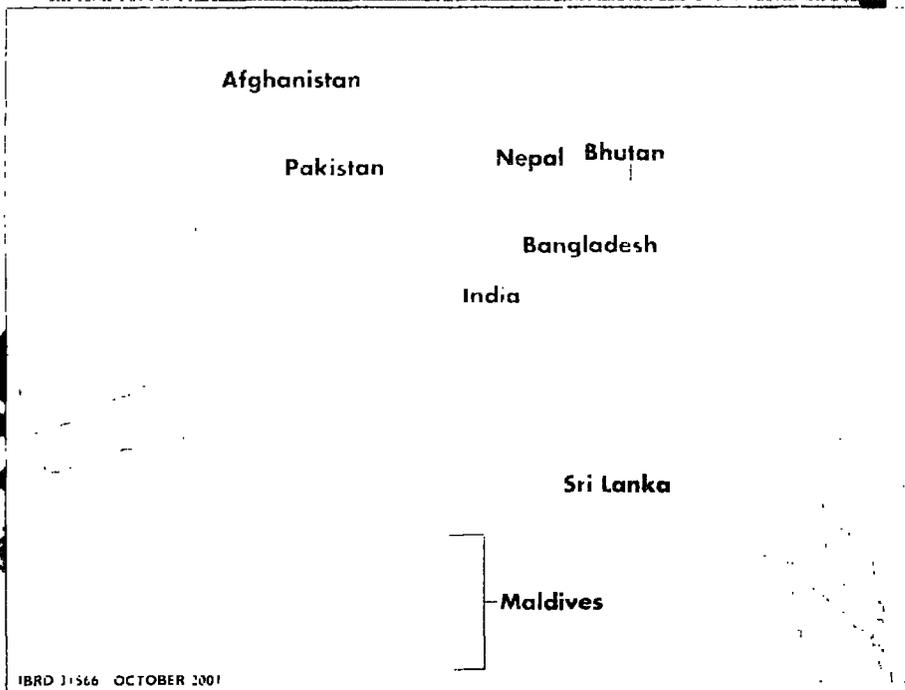
THE COST OF ENVIRONMENTAL DEGRADATION IN THE MIDDLE EAST AND NORTH AFRICA

Under the METAP program, a project to assess the cost of environmental degradation in the Region's countries is currently under preparation. Employing the most recently available tools and methodologies from environmental economics, the project has two aims. The first is to assess the damage costs associated with environmental degradation. These damage costs could be regarded as benefits lost due to environmental inaction. The second is to estimate the replacement costs necessary to restore the degraded environment. These two estimates will help policymakers to prioritize environmental interventions.

This analytical work has already started in Algeria, Egypt, and Tunisia, and is planned to expand to include Lebanon, Jordan, and West Bank/Gaza.

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MNA website —
<http://www.worldbank.org/mna/mena.nsf>



— India

For the past decade, South Asia has been the second fastest growing region in the world, after East Asia. Yet

the region continues to face fundamental constraints on sustainable development. About 40 percent of the world's poor live in South Asia, mostly in rural areas. In spite of reforms dating to the early 1990s, countries in the region are still facing fiscal imbalances; limited progress on trade liberalization; poor enabling and judicial environments for the private sector; and lack of accountability of public institutions. Poor economic management is also reflected in the large subsidies and the lack of economic pricing of natural resources, including water, energy, and agricultural land. In addition, many state-owned industries—for example, steel, fertilizer, and petrochemicals, as well as private manufacturing industries such as leather, textiles, sugar, and pulp and paper—have prospered as a result of strong government protection policies and lack

of compliance with environmental regulation. In this context, reform agendas, including deregulation and fiscal efficiency, often conflict with political institutions and interests.

The region faces enormous environmental problems, including resource depletion and ecological degradation, indoor and urban air pollution; lack of access to clean water supplies and sanitation; toxic and hazardous agro-industrial waste generation and disposal; and vulnerability to natural disasters. These problems threaten the lives and livelihoods of millions of people. Estimates suggest that premature deaths and illness linked to major environmental health risks account for one fifth of the total burden of disease in the region, a toll comparable to that of malnutrition (15 percent) and larger than that from any other preventable risk factor. In India, inadequate water supply and sanitation are estimated to account for 9 percent, and indoor air pollution for 6 percent, of the environmental health burden. Air pollution causes approximately 750,000 premature deaths annually in India, 160,000 in Paki-

stan, and 130,000 in Bangladesh, of which about 60 percent are from indoor air pollution.

Significant natural resource concerns in South Asia include water quality degradation and local and regional water scarcity; dwindling forests, coastal wetlands, freshwater bodies, and fisheries; soil degradation resulting from nutrient depletion and salinization; and poorly managed water resources. Observers note that while many rural villages look similar to how they looked decades ago, the surrounding land degradation is often pervasive and severe.

South Asia stands out as the one region of the world most vulnerable to natural disasters such as floods, cyclones, and earthquakes. Such disasters affect the region regularly. From 1990 to 1998, the region accounted for over 60 percent of disaster-related deaths worldwide, and in the past two years, the Orissa cyclone and Gujarat earthquake have claimed thousands of lives.

Improving the quality of people's lives

Because South Asia is among the most populated and impoverished regions in the world, our environment strategy focuses foremost on improving the quality of life of the poor by improving their health and livelihood systems and reducing their vulnerability to changes in environmental conditions.

Our environmental health focus can be seen in three major areas. First, the Bank is supporting innovative analytical work on the role of environmental health factors such as water supply and sanitation and reduced air pollution in achieving improved household health. The research findings from work in Andhra Pradesh are guiding health and infrastructure

strategies across the region. Second, ongoing work on urban air pollution is seeking the most cost-effective ways to reduce pollution levels that are not only among the highest in the world, but are worsening (see *Box*, below). Third, the extensive groundwater arsenic contamination in Bangladesh is eliciting a strong government and Bank-supported response, including mitigation, medical treatment, and community education.

In terms of livelihoods, our strategy places the highest priority in the areas of water resources and watershed management. In the absence of improved irrigation management, water conservation, and water harvesting in many arid and degraded parts of South Asia, small-holder farmer livelihoods will fall to unacceptable levels. Irrigation practices are financially unsustainable due to subsidies. Further, they are often also environmentally unsustainable due to land

salinization, waterlogging, and groundwater depletion. Watershed management and land reclamation projects are important parts of the Bank-financed rural portfolio in Pakistan (along the Indus basin, and in Baluchistan) and India (see *Box*, top of page 46). Community forestry and forest rehabilitation activities have succeeded in improving access of the rural poor to forest resources in India, particularly in Madhya Pradesh, and in Nepal. Fisheries and coastal area management are important issues in Bangladesh, where several projects address the livelihoods and biodiversity aspects of water resources management, as well as promote greater coastal mangrove protection to reduce the disastrous impacts of major cyclones.

Strategies for reducing vulnerability to natural and environmental disasters include support for changes in land-use planning, disaster preparedness, commu-

REDUCING EMISSIONS BY TWO-STROKE ENGINES IN SOUTH ASIA

Urban air pollution is a leading cause of premature deaths in South Asian cities. Vehicles with two-stroke engines, which are half of all vehicles, contribute significantly to the problem. Two- and three-wheelers with two-stroke engines are popular because they are cheaper than their four-stroke engine equivalents. However, they are also a significant source of fine particulate emissions, the most damaging type of airborne pollutants—responsible for about 200,000 premature deaths per year in South Asian cities. Some steps have already been taken to address the problem by banning certain older vehicles, introducing cleaner engine types, and introducing some cleaner lubricants and fuels. For example, compressed natural gas (CNG) has been introduced in New Delhi. Still, it is important to understand the cost-effectiveness and feasibility of introducing different types of measures to reduce fine particulate emissions.

A recent World Bank report, *Improving Urban Air Quality in South Asia by Reducing Emissions from Two-Stroke Engine Vehicles*, analyzes different technical and policy options for reducing emissions from two-stroke engines. Two immediate simple solutions—using the correct type and concentration of lubricant and carrying out regular maintenance—would significantly reduce emissions from two-stroke engines while saving drivers money. As for new vehicles, introducing price and trade policies to encourage a switch to four-stroke engine vehicles, as well as installing catalytic converters, would greatly reduce tailpipe emissions. Finally, a strong public awareness campaign—involving industry, government, unions, and others—to promote these measures is needed. The newly approved Air Quality Management Project in Bangladesh is actively engaged in the implementation of these strategies in Dhaka, as are several activities in India (including the air quality management component of the Environmental Management Capacity-Building Project and the Mumbai Urban Transport Project) and a region-wide air quality initiative funded by ESMAP.

SUSTAINABLE WATERSHED MANAGEMENT IN INDIA

The South Asia Region is implementing a new generation of Natural Resource Management (NRM) projects focusing on the needs of the poor living on marginal lands and degraded watersheds. These projects integrate community-led development with innovative social, technical, scientific, and Geographic Information System (GIS)-based monitoring and evaluation approaches.

The Integrated Watershed Development Project (Hills II) in India uses participatory approaches to increase productive potential and promote sustainable watershed management in five Indian states (Haryana, Himachal Pradesh, Jammu and Kashmir, Punjab, and Uttar Pradesh) in the fragile and highly degraded Shivaliks Hills. The project covers 2,000 villages in a 200,000-hectare area. Village development committees (VDCs) have been formed and given the responsibility for identifying and implementing priority watershed interventions in their villages. Project activities include micro-watershed treatments such as vegetative barriers, improved cropping systems, horticulture, and silvopasture; fodder and livestock development (artificial insemination for genetic improvement; veterinary health improvement; and fodder production); and rural infrastructure.

The medium-to-long-term aim of these investments is to improve rural livelihoods through stronger community management of natural resources on a sustainable basis. Some villages are already experiencing increased water availability, reduced soil erosion, improved vegetative and forest cover, higher crop and horticulture yields, and increased milk production. Project activities also help reduce risks from natural and environmental disasters. For example, improved water management reduces vulnerability to droughts.

nity involvement and education, water conservation and management, building codes, and emergency-phase interventions. Through activities related to cyclones, coastal flooding, and earthquakes in Bangladesh and India (Orissa, Andhra Pradesh, and Gujarat), we are also intensifying our work on social protection measures to protect people who are vulnerable to natural disasters.

Improving the quality of growth

Since equitable and sustainable economic growth remains essential for substantially improving the quality of life of the poor, our strategy supports policies and investments that support quality growth. Attention to environmental and social impacts play a strong role in ensuring the sustainability not only of World Bank-financed projects, but of all investment activities in a country. The shift in Bank lending operations toward a greater emphasis on programmatic lending has ex-

panded the Bank's role in achieving better environmental information, monitoring, and enforcement, through both projects and policy dialogue (see *Box*, at right). In addition, adequate safeguards are essential to ensuring quality of growth, in addition to the promotion of strategic sectoral and regional environmental assessments. Examples include sectoral assessments for energy reform projects in India and regional assessments for watershed and social fund projects in Pakistan, India, and Bangladesh. In addition, more attention is being given to integrating social and environmental assessments because of the intertwined nature of the issues involved. Combined environmental and social sectoral assessments for transport, urban, and rural development projects are now routinely being conducted in South Asia. Furthermore, there is increasing emphasis on environmental monitoring and evaluation, taking advantage of improved information management tools and human resources. Finally, the Bank is placing a strong emphasis on local ownership and

FOCUS STATES IN INDIA

The Bank's recent Country Assistance Strategy for India continues its "focus-state approach," begun about three years ago. Under this program, focus states enter into a targeted program of structural adjustment operations that address fiscal and governance reforms. Under a successful reform scenario, reforming states also receive substantial assistance through sector investment loans. The three current focus states are Uttar Pradesh, Andhra Pradesh, and Karnataka.

The incorporation of environmental concerns into the focus-state approach is based on three main operational strategies:

- Strengthening the environment agencies to address both (a) the specific environment-related issues arising out of the Bank's focus state program, such as power sector reform or watershed management issues, and (b) other priority environmental issues that directly impede poverty reduction, such as weak enforcement of pollution regulations.
- Mainstreaming the environment by agreeing with task teams on areas where environment-related inputs would help focus sectoral projects on poverty outcomes, such as health, livelihoods, and vulnerability. The environment-related discussions may well be cross-sectoral, such as in the example of rural health, which brings together issues not only in the health sector, but in infrastructure, education, and energy.
- Achieving efficiencies across the World Bank program—and potentially across other investment activities being undertaken by the state government in applying the Bank's safeguard policies—by for example using sectoral and regional environment assessment methodologies that look more broadly at issues than would be the case for single project assessments.

capacity building among its clients in South Asia to help them strengthen their environmental safeguard systems and practices.

Enhancing the quality of the global and regional commons

The degradation of the region's global commons can constrain economic development because of its huge opportunity cost and threat to political security. The region's water resource systems, for example, are highly interdependent. Our focus is on achieving global environmental objectives as a byproduct of promoting local development benefits.

- The management of shared river basins and seas poses an important challenge for South Asia. The Bank has been involved in the past in helping to facilitate a robust agreement between India and Pakistan on the Indus River basin. The region would derive substantial benefits from greater cooperation among riparians on other internationally shared river basins, primarily the Ganges-Brahmaputra-Meghna basin.
- South Asia is poised to become a major contributor to greenhouse gas (GHG) emissions. Although per capita emissions in the region are currently very low, with total production of carbon dioxide representing only about 5 percent of global emissions, they are increasing about 7 percent per year—twice the world average. To reduce the growth in GHG emissions, continued power sector reform—with widespread efficiency gains in transmission, distribution, and end-use—and continued sector reform is required. In addition, opportunities exist for further renewable energy use by



rural and urban communities and industrial users. Small-scale renewable energy supplies may be the most cost-effective solution to providing reliable electricity in rural areas not connected to the grid. The region is also particularly vulnerable to the impacts of climate change because of its extensive low-lying coastal areas. A recently completed study on climate change adaptation in Bangladesh found that the financial cost of adaptation is relatively low given that many of the planning and investment priorities are consistent with development practices and priorities that have already been identified.

- The custodians of South Asia's biodiversity are largely the rural poor, who often depend directly on these resources for their livelihood and sustenance. Our efforts focus on

(a) finding effective mechanisms to channel available global resources to local communities in order to provide adequate incentives to change patterns of resource use, and (b) broadening the scope of the GEF portfolio to promote biodiversity conservation over whole landscapes.

- The ongoing Montreal Protocol Program in South Asia has continued to expand. In India, approximately 3,000 tons of ODS chemicals have been phased out. In addition, a major initiative to phase out production of all CFCs in India (one of the world's largest remaining producers of these chemicals) began implementation in 2000.

This article was prepared by Carter Brandon of the South Asia Environment Sector Unit, (202) 458-2752, fax (202) 522-1664. SAR website — <http://www.worldbank.org/sar/sa.nsf>



Building a Sustainable Development Roadmap

IFC's Strategy to Ensure Environmental and Social Responsibility

"I strongly believe that private sector investment and sustainable growth in the developing world is fundamental to achieving greater equity in the development process."

Peter L. Woicke,
Executive Vice President, IFC

As the World Bank's private investment arm and the world's largest multilateral source of loan and equity financing for private investments in developing countries, the International Finance Corporation (IFC) is determined to play a lead role in the drive for sustainable private sector investment. Founded in 1956 and owned collectively by its 175 member countries, IFC is a global investor and advisor that promotes sustainable projects that are economically viable, financially and commercially sound, and environmentally and socially responsible. IFC believes that economic growth is crucial to poverty reduction; that such growth is grounded in the development of entrepreneurship and successful private investment; and that a conducive business environment is needed for private businesses to thrive and contribute to improving people's lives in developing countries.

How does IFC do this? IFC leads by example by:

- Taking educated risks—IFC's investments in frontier sectors and countries have long had both a solid catalytic role and a strong demonstration effect
- Adding value through a core commitment to promoting high environmental and social standards in all of our projects and by listening actively to stakeholders and their concerns

- Recognizing, in every investment, the value of sound corporate governance structures
- Seeking to be transparent, accountable, and equitable in the development process.

IFC's management system for environmental and social issues in investments

IFC's approach to environmental and social issues in project financing is evolving from ensuring compliance to the development of a sustainable development strategy. To ensure compliance and accountability, IFC has developed a number of integral management components for its investments and activities.

IFC has a well-developed policy and procedural framework. Its environmental and social safeguard policies are closely harmonized with those of the World Bank, with minor adjustments to adapt them to IFC's private sector context. IFC also adheres to a policy against Harmful Child Labor and Forced Labor. IFC applies the World Bank Group's *Pollution Prevention and Abatement Handbook* (1998) to its investments, with high-level management clearance required for any variation. To provide guidance for sectors for which no

guideline is available in the Handbook, IFC has developed its own guidelines, including worker health and safety guidelines.

IFC's Environmental and Social Review Procedure (ESRP) guides IFC staff in the application of the policy and guideline framework to environmental and social analysis of IFC projects. The ESRP, adopted in 1998, contains important developments in IFC's approach to financial intermediary in-

vestments, local public consultation and disclosure requirements, and the improved integration of social analysis into the environmental assessment process. These requirements are integrated fully into IFC's business processes and project cycle.

IFC management continues to support building significant environmental and social management and review capacity. IFC believes that environmental and social issues are equal-

ly important, that they are mutually supportive, and that they benefit from joint management oversight. A direct reporting line continues from the director of the Environment and Social Development Department to the executive vice president of IFC. This reporting framework ensures independence from operational line management, as does a single clearance function.

With the addition of more environmental and social review staff, IFC has developed and implemented a Quality Project Management system, which ensures that specialists have access to the appropriate management tools to make informed decisions and to promote consistency in project processing. An internal audit program regularly reviews the performance of both the system and the individual project managers. IFC also applies a risk rating to apportion supervision resources to the highest priority areas.

IFC works closely with its clients to ensure compliance with safeguard policies and pollution standards. This is done through a number of management tools, including:

- Management and/or action plans (for example, for environmental management, resettlement, or corrective action)
- Environmental and social conditionalities in project investment agreements,

which commit IFC's clients to comply with IFC's safeguard policies and guidelines and, where appropriate, to follow a specific action program to ensure compliance; and monitoring of environmental and social performance of projects as part of IFC's overall portfolio supervision.



IFC's status as a public institution requires that it establish a significant mechanism for accountability to its member countries and civil society, particularly with respect to its environmental and social performance. Perhaps the most innovative aspect of IFC's environmental and social accountability is the establishment of a Compliance Advisor/Ombudsman (CAO)—an accountability office designed to provide non-judicial, practical, problem-solving approaches to contentious aspects of projects. This office is fully independent of the managements of IFC and the Multilateral Investment Guarantee Agency (MIGA) and reports directly to the president of the World Bank Group. The current CAO is Meg Taylor of Papua New Guinea. The CAO has three roles:



To ensure compliance with IFC and World Bank environmental guidelines, Tashkent-based Elma Cheese—an Uzbek-Dutch joint venture—trains its workers in occupational health and safety standards and has built its own wastewater treatment plant.

- Responding to complaints by persons affected by projects and attempting to resolve the issues, using a flexible, problem-solving approach
- Providing independent advice to the president and senior management of IFC and MIGA
- Overseeing audits of IFC's and MIGA's environmental and social performance, both on systemic issues and in relation to sensitive projects.

The CAO Office receives input and feedback through its Reference Group comprising NGOs and civil society, business and industry, and IFC/MIGA management.

IFC recognizes the importance of maximum transparency and solicits feedback to improve on its performance. IFC relies on its disclosure policy and public consultation standards to ensure that interested parties have an opportunity to be heard and to exert influence with respect to specific projects and policies. IFC receives ongoing feedback and evaluation internally from its Operations Evaluation Group and through



IFC's investment in South Africa's Spier Estate—a refurbished combination of winery, hotel, and conference center—demonstrates its commitment to sustainable development. Local communities share in Spier's vision. An organic farming project is underway that aims at helping previously landless black farmers run their own operation.

CAO investigations and advice. IFC also welcomes and receives feedback from externally interested parties, including civil society and NGOs.

IFC and environmental projects

In addition to seeking to mitigate and manage the impacts of its traditional projects, IFC has established units within several investment departments to focus on identifying, structuring, and financing environmental projects. Examples include the Utilities Group within IFC's Infrastructure

Department, which finances water, wastewater, and solid waste management projects; and IFC's Renewable Energy and Energy Efficiency Team, which is housed in IFC's Power Department.

In 1996, IFC created the Environmental Projects Unit to act as a catalyst and incubator for projects with specific environmental benefits and goals. In developing projects for IFC's own account, this unit—now renamed the Environmental Markets Group—operates as a cost center that provides technical analysis and financial structuring services to prepare projects for funding by the relevant investment departments. More recently, the Environmental Markets Group has begun to encourage the identification and implementation of eco-efficiency improvements in mainstream IFC projects. In supporting projects with environmental benefits,

the group draws on IFC's own investment resources and, where appropriate, concessional funding from sources such as the Global Environment Facility. The Environmental Markets Group also undertakes special initiatives such as identifying projects to reduce greenhouse gas emissions under the Kyoto Protocol.

Looking ahead — The transition to sustainability

IFC is launching a sustainability initiative that has the potential to significantly increase the development impact of its private sector investment activities. Sustainability for IFC means incorporating a more opportunistic, added-value, market incentive-oriented approach to complementing the existing regulatory-based approaches embedded in our safeguard policies.

FOR ADDITIONAL INFORMATION

A full list of IFC's environmental and social policies, guidelines, ESRP and publications is available at <http://www.ifc.org/enviro/>

Information on the IFC/MIGA Compliance Advisor/Ombudsman (CAO): <http://www.ifc.org/cao/>

Environmental Projects Unit (EPU) activities: <http://www.ifc.org/epu/>

As it moves beyond compliance, IFC will not compromise its minimum standards. Rather, it recognizes that achieving an appropriate balance among the financial, economic, social, and environmental dimensions of sustainability will depend on the circumstances and locality of the particular investment. This is not a one-size-fits-all philosophy, but an intention to operationalize sustainable development in a way that maximizes IFC's overall development impact and role.

The sustainability initiative will encompass all the major components of IFC's operations. In its core investment business, work is underway to identify the significance of environmental, social, and governance factors in sector investment strategies. At the transaction level, we are exploring ways to equip investment teams to bring added value to our clients in these areas, while also ensuring that they reap maximum business benefit. This requires a sophisticated understanding of the cause and effect of these factors on business performance in emerging markets, and an ability to transfer emerging private sector sustainable practices into the developing country context of its operations—a logical and evolutionary extension of IFC's traditional role in ensuring financial and economic sustainability.

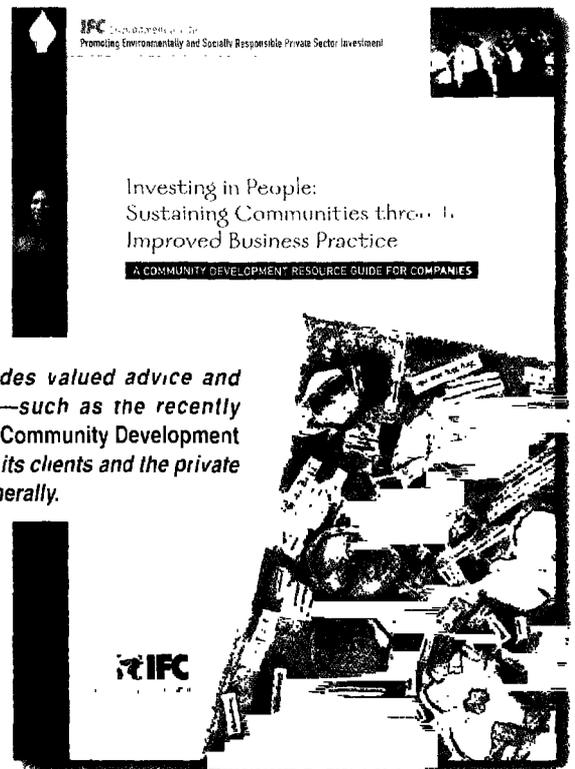
Work is also underway to carefully identify IFC's role and

responsibility as a lead investment organization in the developing world and in identifying the key impacts of its physical operations or "footprint."

A primary focus will be on how actions that create environmental or social value or improve corporate governance can also create financial value for IFC's clients. This financial value can take the form of:

- Tangible cost reductions, through eco-efficiency or cleaner technology
- Improved revenues, through better access to global markets, securing supply chains, or market differentiation and "branding"
- Reduced risks, through, for example, strengthened and positive interactions with local communities
- Better access to financing
- Access to intellectual capital and innovation through staff attraction and retention.

We believe that sustainable business practices converge with good management and that, as a result, sustainable businesses will be the long-term winners. As investors, maximizing long-term shareholder value is one of our goals. It simply makes commercial sense: any business that puts its supply chain at risk or ignores reputational issues is not acting in the interests of its shareholders or bottom line, let alone other stakeholders.



This is an area in which IFC has emerged as an important change agent among the private sector investment institutions operating in the developing world. Our advice is sought by other international financial institutions, commercial banks, and the business community at large. IFC guidance documents on the value of public consultation and community development are publications that are widely referred to by practitioners and businesses.

The building blocks of this transition are currently being put in place through internal discussions, and substantive consultations with all stakeholders are expected to commence in late 2001.

We believe that the journey toward sustainability will bring

many benefits to IFC's clients. Furthermore, we believe that it will also benefit IFC by:

- Differentiating IFC from other financial institutions in our ability to add value
- Motivating our staff
- Allowing us to operate in high-risk areas with renewed confidence in our role and ability to achieve sustainable outcomes
- Contributing positively to IFC's mission to reduce poverty and improve people's lives.

This article was prepared by Shawn Müller of IFC's Corporate Relations Unit (202) 473-1404, fax (202) 974-4384, and Glen Armstrong of IFC's Environment and Social Development Department (202) 473-7038, fax (202) 974-4389 and is based on IFC's contribution to the World Bank's Environment

NewsUpdates

■ Environment Week



D. Campus

World Bank staff member, Maria Sarraf, helps to clean up Anacostia River's Kingman Island.



D. Campus

On hand to lend help and give moral support were Kristalina Georgieva, Director, Environment Department, World Bank; Robert Boone, President, Anacostia Watershed Society; James Wolfensohn, President, World Bank; and Washington D.C.'s Mayor, Anthony Williams.

The World Bank's Environment Week annually sponsors training sessions, debates, and open meetings for its staff and interested groups. This year, events were spread throughout the month of June, vastly increasing outreach to internal and external audiences.

The event was launched with a keynote address by eminent scientist, environmentalist, and broadcaster David Suzuki on "Economics and Ecology: Setting the Real Bottom Line."

Workshops, many of which were open to the public, focused on specific topics, including lessons from the environmental performance review conducted by the Bank's Operations Evaluation Department; the World Bank's Environment Strategy; work in the regions; persistent organic pollutants (POPs); and strategies to combat air pollution.

There were several panel discussions. A panel on biodiversity conservation in the 21st Century was chaired by Peter Seligmann, CEO of Conservation International, and included Bank President James D. Wolfensohn; Tom Lovejoy, chief biodiversity advisor at the Bank; Orin Smith, CEO of Starbucks; and Edward O. Wilson of Harvard University. Another panel, which was chaired by Environment Department Director Kristalina Georgieva, focused on the implications of climate change for sustainable development—globally and in the Bank's client countries. It included Bob Watson, World Bank chief scientist; Svend Auken, Denmark's Minister of Environment and Energy; Robert O. Mendelsohn, Yale University; David Victor, Council on Foreign Relations, New York; Michael Grubb, Royal Institute of International Affairs, UK; Atiq Rahman, Bangladesh Centre for Advanced Studies; and Benito Mueller, Oxford University.

This year's events also included a significant community outreach component. On June 25, 2001, over 200 World Bank volunteers spent the day removing trash and debris from two neglected islands in the Anacostia River in Washington, D.C. Joined by Bank President James D. Wolfensohn, D.C. Mayor Anthony Williams, representatives from the Mayor's office, and local NGOs, the volunteers endured heat, humidity, and persistent mosquitoes to clean up Kingman and Heritage Islands. They managed to haul away more than 8 tons of garbage. The cleanup was another step in D.C.'s plan to restore the islands as part of the larger Anacostia Waterfront Initiative. The Anacostia Watershed Society applied for a grant through the Bank's Community Outreach Grants Program in April, and was awarded \$15,000 to aid in its restoration efforts.

The August 2001 meeting of the parties to the Framework Convention on Climate Change and the Kyoto Protocol in Bonn had significant implications for the World Bank and its clients.

With the exception of the United States, all parties approved a number of core elements at the Bonn meeting. There was agreement on flexibility mechanisms; land use, land use change, and forestry activities; funding for developing countries; and compliance.

Flexibility mechanisms can be used to augment a country's "significant" domestic actions to reduce greenhouse gas emissions. Since 1999, the World Bank's Prototype Carbon Fund (PCF) has explored how such mechanisms might work. Companies and governments have contributed financially to the PCF, which then uses Fund resources to support projects designed to

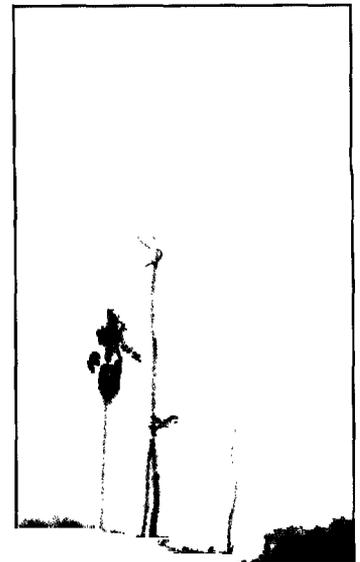
■ Kyoto Protocol — Implications of Bonn

produce emissions reductions that are consistent with the emerging framework for Joint Implementation (JI) and the Kyoto Protocol's Clean Development Mechanism (CDM). Participants in the PCF receive a share of the emission reductions, which are verified and certified in accordance with carbon purchase agreements reached with the respective countries "hosting" the projects, and used toward their Protocol obligations.

It was agreed that industrialized countries could adopt afforestation, reforestation, forest, grassland, and agricultural land management activities as part of their domestic actions to meet their commitments. Within this framework, caps were negotiated for the amount of credit that a country can claim from forest management activities. The amounts of the country-specific caps continue to be a point of friction in the negotiations. For the first commitment period from 2008 to 2012, only afforestation and reforestation activities will be eligible for CDM projects in developing countries. The total credit that an industrialized country can claim from such activities has been limited to 1 percent of its GHG emissions in 1990.

In the funding area, three new funds have been established to help developing countries. The Special Climate Change Fund will be available to developing countries to address adaptation, technology transfer, emissions reductions, and economic diversification. The Least Developed Country Fund will help the poorest countries establish national adaptation programs. The Kyoto Protocol Adaptation Fund will support "concrete" adaptation projects and programs. All three funds are to be managed by the Global Environment Facility (GEF). The European Union, Canada, Iceland, New Zealand, Norway, and Switzerland already have committed to providing \$410 million per year by 2005, which includes their GEF replenishment contributions, for climate change activities.

In the compliance area, it was agreed that there will be no financial penalty for noncompliance. However, a penalty of 1.3 times the shortfall in achieving the reduction goal of the first commitment period will be added to the reduction that has to be achieved in the subsequent commitment period. The legally binding nature of this penalty for noncompliance is still under discussion.



Destruction of tropical forests in Petén, Guatemala.

S. Pagola

■ Nile Basin Initiative



The Nile River

Through the Nile Basin Initiative (NBI), the World Bank is taking an active role in facilitating regional cooperation in the management of a major transboundary resource. The Nile Basin covers 10 countries and is characterized by extreme poverty, instability, rapid population growth, and environmental degradation. Urgent environmental issues include aquatic weed infestations, soil erosion, and sedimentation. Established in 1999, the NBI represents the first time in history that all 10 nations have come together to discuss common goals on how best to fight poverty in the region and achieve sustainable development through the equitable utilization of the Nile Basin's water resources.

In June 2001 in Geneva, international donors, development agencies, and representatives from the Nile's 10 riparian countries met to pledge financial and political support to the NBI. The meeting in Geneva was the first working session for the International Consortium for Cooperation on the Nile (ICCON) and also marked the launch of the newly formed ICCON Consultative Group, which is chaired by the World Bank's Vice President for Africa, Callisto Madavo, and Vice President for the Middle East and North Africa, Jean-Louis Sarbib. The

program for the Nile includes implementation of a basin-wide program of research, capacity building, and technical assistance, as well as the detailed preparation of cooperative sub-basin investment programs in the Eastern Nile and the Equatorial Lakes regions. The first phase of this investment program is anticipated to amount to about \$3 billion. The development partners expressed initial financial support of at least \$140 million to finance the full program.

For more information: <http://www.worldbank.org/afr/nilebasin>

■ \$25 million grant for critical ecosystems

The Critical Ecosystem Partnership Fund (CEPF) took another major step forward in June 2001 when the John D. and Catherine T. MacArthur Foundation awarded the Fund a grant of \$25 million.

Launched in August 2000, the CEPF focuses on biodiversity hotspots, highly threatened regions where an estimated 60 percent of all terrestrial species are found within only 1.4 percent of the planet's land surface. In addition to the MacArthur Foundation, the members of the Fund are Conservation International, the Global Environment Facility, and the World Bank. The new grant brings the assets of the Fund to \$100 million. The Fund's goal is \$150 million. The grant from MacArthur was made to Conservation International, the managing partner of the CEPF.

The CEPF provides financial support, technical expertise, field knowledge, and information to mostly nonprofit organizations working to conserve biodiversity in developing countries. The CEPF Donor Council thus far has approved the spending of more than \$11 million in grant resources, divided among priority areas in West Africa, Madagascar, and the Vilcabamba-Amboró corridor straddling Peru and Bolivia.

Sifaka lemur, Madagascar. More than a dozen species of lemur, most of which are endemic to Madagascar, are considered vulnerable, endangered, or critically threatened.

Duke University Primate Center



In September 2002, the 10-year follow-up to the 1992 Rio Summit will take place in Johannesburg, South Africa. The overall goal of the Rio+10 Summit will be to review achievements since 1992 and attempt to regenerate the global commitment to sustainable development and action on Agenda 21.

The Bank is expected to play a significant role, both in the preparatory process and at the Summit itself. The Bank's contributions to the upcoming Summit include several key elements:

- The 2002/3 World Development Report—*Sustainable Development with a Dynamic Economy*—will explore how poverty and marginality are closely associated with fragile ecosystems and stressed social structures.
- Technical background papers on the Bank's strategic directions for the future, such as measuring and financing sustainable development, poverty and environment, food security and natural resource management.
- WBI activities include (a) a new *Global Dialogue on Sustainable Development* series, which will focus on topics high on the Johannesburg agenda; (b) a collaboration with GLOBE, in a series of workshops for parliamentarians that will enable participants to take an active role in the preparatory process; and (c) special training programs, courses, and policy services on Summit-related topics.

■ Preparations for Rio+10

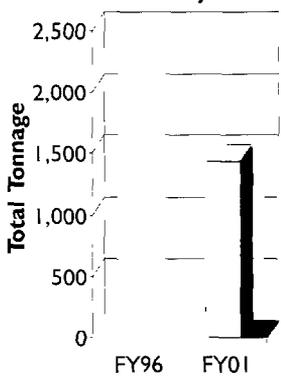


World Bank

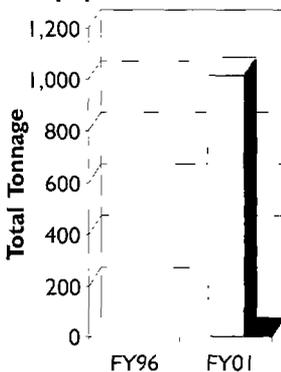
- Additionally, Bank senior management and technical staff will participate in five regional preparatory meetings and three global programs and contribute technical expertise in various roundtable discussions. And finally, the Bank will prepare toolkits to help guide work at the project implementation level, provide advice on how to promote sustainable development, on payments for environmental services, on strategic environmental assessment, and on indicators.

■ Greening the Bank

Waste generated by the World Bank Group at Headquarters has diminished substantially . . .



. . . and recycling of paper has increased



In addition to helping its clients improve their environmental performance, the World Bank Group has examined its own activities and is working to reduce its environmental “footprint.”

“Greening the Bank Group” was the subject of a letter to all staff from Bank President James Wolfensohn in September 1996. The letter called for specific steps to be taken, including an annual independent environmental audit of the World Bank Group to monitor progress and compare the Bank’s efforts to other similar organizations. The first such audit, conducted in 1998, was co-funded by the World Bank Staff Association. The audit’s results have guided conservation efforts, which have also benefited from active staff involvement and suggestions through the Staff Association’s Environmental Working Group (EWG). Efforts have covered a range of physical plant and other workplace environmental issues. Notable achievements include:

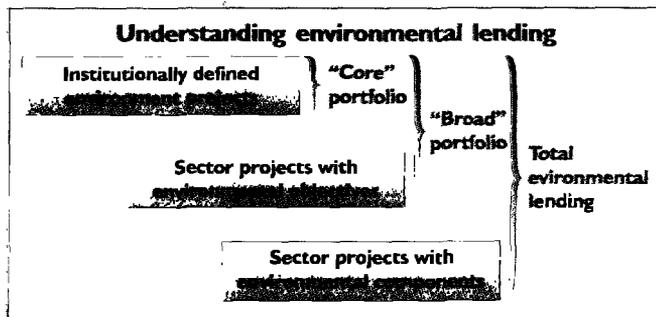
- Substantially increasing the proportion of the Bank’s waste that is recycled.
- Reducing paper use by increased use of electronic communication and record-keeping, and by procuring printers with double-sided printing capability.
- Promoting a transition from incandescent light bulbs to fluorescents, and then to compact fluorescent (CF) lighting, thus significantly reducing energy use. Use of light-sensitive dimmable CFs that provide the required number of foot-candles of light on the work surface using less electricity in daytime are being piloted in one of the Bank’s building.
- Providing more parking, lockers, and shower facilities for staff bicycling to work.
- Making fair-trade coffee available in Bank cafeterias.

There have also been numerous individual initiatives. For example, in the spring of 2001 the Styrofoam packing materials from 10,000 new computers the Bank had ordered were destined for a landfill. Bank staffers found a Pennsylvania company that was willing to pick up the material in Washington. The company grinds up the material and uses it in repaving state roads. The transportation costs were about \$900 more than the payment to the Bank for the Styrofoam. The Bank’s Information Solutions Group agreed to pay for the transportation of the Styrofoam. The Bank’s General Services Department then quickly mobilized to find enough storage space to handle a large truckload of foam. GSD staff also removed any tape or other extraneous materials, so that the recycler would accept the foam. In the end, three large trailer truckloads of foam were recycled.

Greening topics addressed are enormously broad, from reusable chopsticks and labeling hydrogenated oils in the cafeteria; to planting trees around the Bank’s main complex; to relaxing the dress code to reduce cooling and heating costs. Numerous additional measures are under study, including participation in Metrochek, the Washington area’s transit incentive program, which provides a monthly financial rebate to area employees to use mass transit; implementing Energy Star features on personal computers throughout the Bank; and further improving waste separation. Efforts on green procurement are also ongoing (see *Environment Matters 2000*).

The Bank's Environment Portfolio

Over the last decade, the World Bank's activities in the environmental area have evolved from primarily stand-alone projects toward a broader portfolio that includes other sector projects with primarily environmental objectives, as well as projects with minor environmental components. This "greening" of the Bank's portfolio has required a change in the methodology for measuring the true extent of environmental lending.

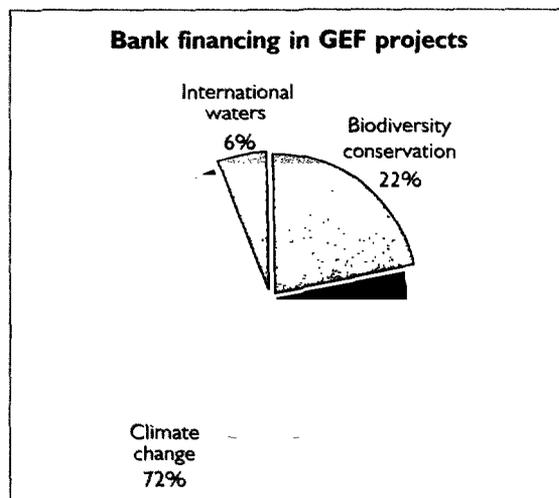
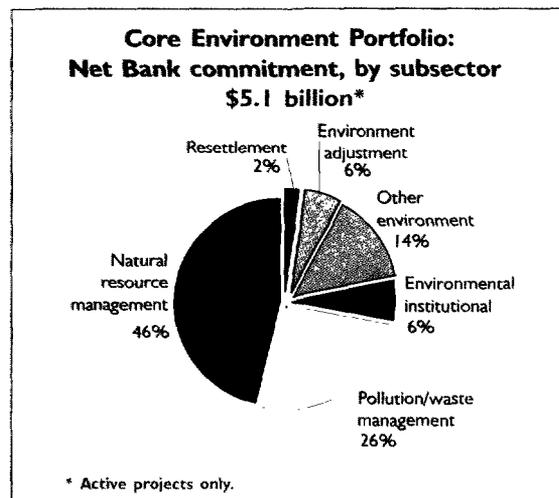
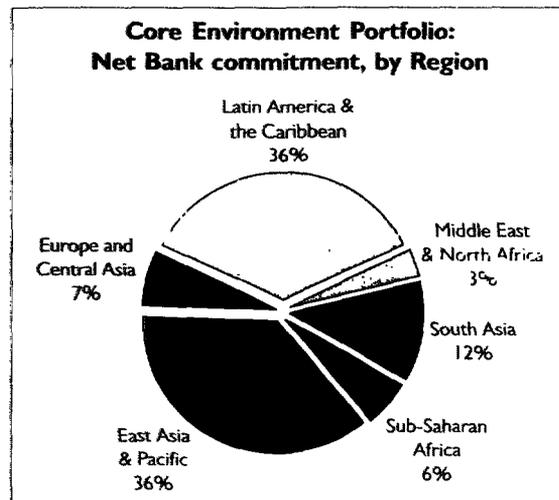


The "core" portfolio. Stand-alone environment projects focus on natural resource management ("green projects"), pollution/waste management ("brown projects"), and institutional development.

At the end of the 2001 fiscal year, this "core" environment portfolio consisted of 95 active projects amounting to \$5.1 billion in Bank lending.

Almost three quarters of active projects, by lending volume, are in two regions: East Asia and the Pacific (EAP) and Latin America and the Caribbean (LCR). Nearly half (46 percent) are natural resource management projects. Pollution/waste projects comprise 26 percent of the core portfolio, while 6 percent of projects address institutional development.

The global portfolio. The World Bank is an implementing agency for the Global Environment Facility (GEF). GEF projects focus on biodiversity conservation, climate change, international waters, and ozone depletion. As of March 2001, there were 134 full-size (more than \$1 million each) GEF projects, amounting to a total of \$7.3 billion in total project costs, of which \$1.5 billion is Bank



GREENING SECTORAL PROJECTS

financing. Nearly three quarters (72 percent) of Bank financing in GEF projects is for climate change issues. In addition, there are 46 medium-sized GEF projects (loans under \$1 million), which are concentrated in Latin America and the Caribbean and in Sub-Saharan Africa. These projects amount to nearly \$145 million, including \$37 million in Bank commitments.

The core portfolio, however, captures only part of Bank lending for the environment. The core portfolio of institutionally defined "environment" projects is easily measurable, but capturing other sector projects with environmental objectives or environmental components requires a detailed investigation of the Bank's overall portfolio.

Toward this end, the Environment Department recently reviewed the entire portfolios of four key sectors—agriculture, electric power and energy, urban development, and water supply and sanitation (see *Box*, above right). These sectors were chosen based on their relevance to environmental issues. The exercise covered almost 800 projects, both active and closed, between 1990 and 2000. The results show an unequivocal trend toward increased environmental lending in sector projects.

The cumulative value of both core environmental operations and environmental investments in other sectors (both active and closed projects) since 1990 amounts to almost \$18 billion (see *Chart*, at right).

Looking ahead

To date, the review of environmental components in sectoral projects has looked at only four key sectors. To better assess existing environmental mainstreaming, the review will be ex-

Environmental components (major and minor) in sectoral projects were identified based on criteria established with the assistance of experts in each sector. The value of each environmental component was then estimated based on the breakdown of project costs.

Agriculture. Environmental components were estimated based on the funds allocated to environmentally sustainable activities in forestry, watersheds, and biodiversity; agriculture and livestock; irrigation and drainage; fisheries, coastal zones, and aquaculture; and environmental policies and institutional capacity.

Electric Power and Energy. Environmental components promote clean transport fuels; fuel switching; technology transfer; strengthening environmental management capacity in the energy sector; removing market barriers to renewable and energy efficiency investments; reducing gas flaring and other GHG-intensive activities; facilitating carbon trading and joint investments to reduce emissions; and facilitating environmentally sustainable extraction, production, processing, transport, and distribution of oil, gas, and coal.

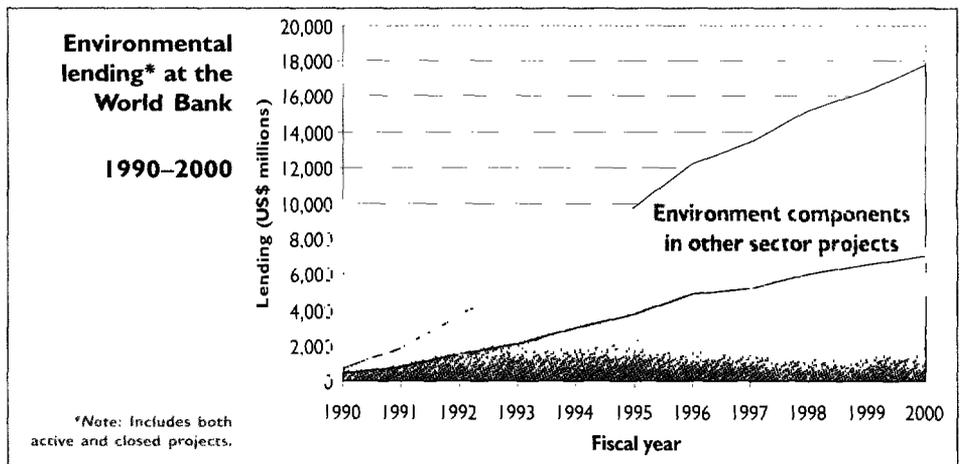
Urban Development. Environmental activities in urban projects include the provision of basic environmental services, including access to water supply and sanitation, drainage, solid waste collection, health education, and reduced indoor air pollution.

Water Supply and Sanitation. Environmental activities in this sector include water quality improvement and monitoring; water pollution abatement; wastewater and sewage management; standards setting, regulation, and enforcement; environmental policy interventions; and institutional strengthening and public awareness.

panded to examine projects in other sectors such as health, education, and transportation. This will also help identify potential for future incorporation of environmental issues into sectoral project design.

A system for monitoring environmental mainstreaming in the Bank's portfolio is being developed. While there is evi-

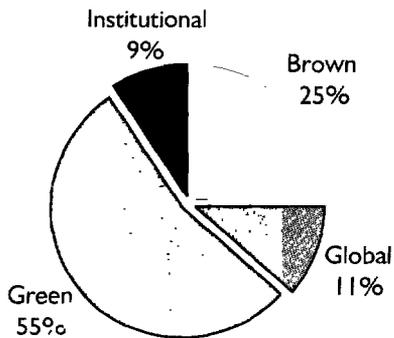
dence that projects are increasingly incorporating environmental objectives and components, there are currently few monitorable indicators to measure the success of this mainstreaming. The development of monitorable indicators for different sectors would serve as a sectoral scorecard for both quantifying—and qualifying—environmental mainstreaming in World Bank projects.



Regional environment portfolios

The region's active environmental portfolios consist of core environment projects as well as other sector projects with primarily environmental objectives. GEF and Montreal Protocol projects are also included.

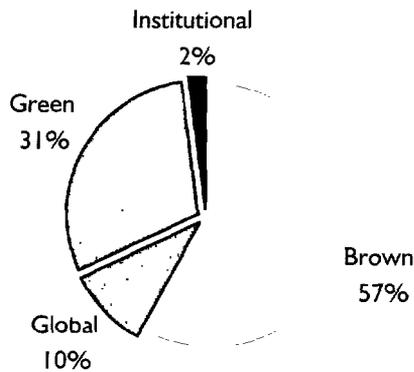
Sub-Saharan Africa Region
\$0.97 billion*



* Active projects only.

Sub-Saharan Africa (AFR). In this region, more than half (55 percent) of the projects are "green"—focused on natural resource or rural environmental management. Ethiopia's Conservation of Medicinal Plants project, for example, seeks to initiate support for conservation, management, and sustainable utilization of medicinal plants for human and livestock healthcare. A quarter of the region's projects are "brown," addressing pollution/waste management issues. Africa also has a number of global projects. Recent examples of GEF projects include Benin's National Parks Conservation and Management and Malawi's Mulanje Mountain projects—both of which deal with biodiversity conservation.

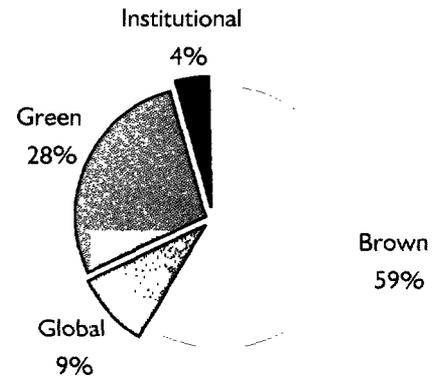
East Asia and Pacific Region
\$6.37 billion*



* Active projects only.

East Asia and Pacific (EAP). Pollution/waste management-related projects constitute 57 percent of the region's environmental portfolio. "Green" projects account for almost another third of the portfolio. In fiscal 2001, four "brown" projects were approved. Two projects in China—Liao River Basin and Huai River Pollution Control—are designed to enhance water quality management in river basins. Vietnam's Ho Chi Minh City Environmental Sanitation project will lead to sustainable improvements in drainage and wastewater services. Indonesia's Western Java Environment Management project deals with formulating provincial environmental strategies and improvements in solid waste management.

Europe and Central Asia Region
\$2.57 billion*

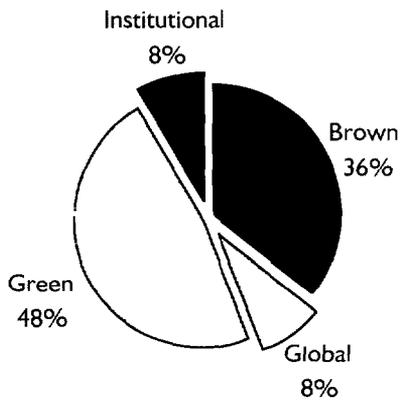


* Active projects only.

Europe and Central Asia (ECA). Like East Asia, projects in this region also focus primarily on pollution and waste management (59 percent). Recent "brown" projects include the Liepaja Solid Waste Management project in Poland, and municipal wastewater projects in the Russian Federation and Hungary. Recent "green" projects include Kazakhstan's Syr Darya Control and Northern Aral Sea project, which seeks to sustain and increase agriculture and fish production in the Syr Darya basin and improve ecological and environmental conditions in the delta area.

This article was prepared by Anjali Acharya and Alethea Mariel T. Alvarado of the Environment Department, (202) 458-5298, fax (202) 477-0565.

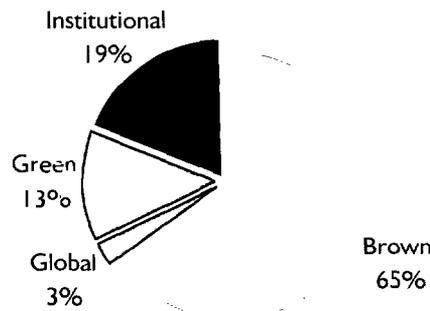
Latin America and Caribbean Region
\$3.74 billion*



* Active projects only.

Latin America and Caribbean (LCR). Almost half of all environment projects in this region are focused on natural resource and rural environmental management. Recent examples include the Panama Land Administration project, which aims to enhance natural resources conservation through the consolidation of the national system of protected areas and indigenous people's territories. The Ecuador Rural Water Supply and Sanitation project is focused on helping the poorest populations in rural communities through investments in sustainable water and sanitation services. On the global front, two projects in Mexico—the Mesoamerican Biological Corridor project and the Indigenous and Community Conservation of Biodiversity project (COINBIO)—both aim to conserve areas of high biodiversity.

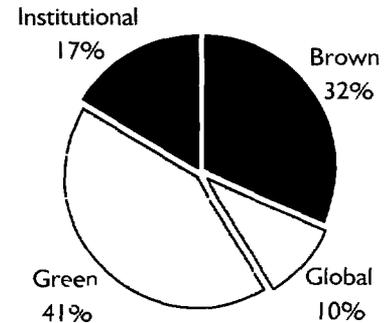
Middle East and North Africa Region
\$1.04 billion*



* Active projects only.

Middle East and North Africa (MNA). Solid waste, sewerage, and water supply and sanitation projects predominate in this region, accounting for about two thirds of the active environmental portfolio. In fiscal 2001, the Yemen Rural Water Supply and Sanitation project aims to expand sustainable rural water supply and sanitation service coverage to mostly poor rural dwellers in 10 governorates. The Solid Waste and Environment Management project in the West Bank and Gaza will implement sound solid waste management systems.

South Asia Region
\$2.30 billion*



* Active projects only.

South Asia (SAR). "Green" projects account for 41 percent of the South Asia Region's environmental portfolio. For example, the Karnataka Watershed Development project aims at improving the productive potential of selected watersheds. On the "brown" side, which comprises about 32 percent of the portfolio, the Air Quality Management project in Bangladesh is intended to reduce vehicular emissions in metropolitan areas. The project will support setting standards, enforcing pilot programs that demonstrate cleaner technologies, and implementing air quality monitoring. In the global area, Pakistan's Protected Area Management project is seeking to conserve globally important habitats and species in three protected areas.

ENVIRONMENT BY THE NUMBERS

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ince 1998, the World Bank has been publishing a comprehensive set of environmental indicators in its annual publication

World Development Indicators. Environmental indicators are also published in the *Little Green Data Book*.

The diversity of conditions across countries and limitations in data availability

make it impossible to capture environmental trends worldwide with a small number of indicators. The indicators shown here illustrate some of the main environmental themes.

Country name	Population millions (1999)	GNI per capita \$, (1999)	Genuine savings % GDP (1999)	GDP per unit of energy use PPP\$(Kg oil equiv (1998)	CO ₂ emissions per capita mt (1997)	Share of electricity generated by coal %	Population density, rural people/sq km arable land	Annual deforestation % change, 1990-2000	Nationally protected areas % of land area	Freshwater resource per capita m ³	Access to improved water source % total pop	Access to sanitation % total pop
Albania	3.4	930	-8.3	10.3	0.5	..	345	0.8	3.1	12,621	..	..
Algeria	30.0	1,540	6.0	5.4	3.4	..	159	-1.3	2.5	477	94	73
Angola	12.4	220	..	3.8	0.5	..	268	0.2	6.6	14,890	38	44
Argentina	36.6	7,550	8.2	7.3	3.9	1.9	15	0.8	1.8	9,841	79	85
Armenia	3.8	490	-15.9	4.3	0.8	..	234	-1.3	7.6	2,783	..	..
Australia	19.0	20,940	11.4	4.1	17.2	80.0	5	0.0	7.1	18,559	100	100
Austria	8.1	25,420	16.1	6.7	7.8	9.1	205	-0.2	29.6	10,381	100	100
Azerbaijan	8.0	560	-24.4	1.5	4.1	..	205	-1.3	5.5	3,796	..	..
Bangladesh	127.7	370	9.6	8.9	0.2	..	1,204	-1.3	0.8	9,482	97	53
Belarus	10.0	2,550	15.5	2.5	6.1	..	49	-3.2	6.3	5,781	100	..
Belgium	10.2	24,650	18.1	4.3	10.5	20.6	35	0.2	-	..	..	..
Benin	6.1	380	3.2	2.4	0.2	..	207	2.3	7.0	4,220	63	23
Bolivia	8.1	990	3.4	4.0	1.4	..	156	0.3	14.4	38,830	79	66
Bosnia and Herzegovina	3.9	1,210	..	..	1.2	33.7	436	0.0	0.5	9,662	..	..
Botswana	1.6	3,040	6.2	..	2.2	..	231	0.9	18.5	9,256	..	..
Brazil	168.0	3,880	12.2	6.5	1.9	2.2	62	0.4	4.4	32,256	87	77
Bulgaria	8.2	1,390	2.0	2.0	6.1	44.8	60	-0.6	4.5	2,193	100	100
Burkina Faso	11.0	240	0.3	..	0.1	..	260	0.2	10.4	1,592	..	29
Burundi	6.7	120	-7.2	..	0.0	..	779	9.0	5.7	539	..	..
Cambodia	11.8	260	..	..	0.0	..	263	0.6	16.2	40,505	30	18
Cameroon	14.7	600	8.0	3.5	0.2	..	127	0.9	4.5	18,243	62	92
Canada	30.5	20,140	14.0	3.2	16.6	19.1	15	0.0	9.8	91,567	100	100
Central African Republic	3.5	290	1.8	..	0.1	..	108	0.1	8.2	39,833	60	31
Chad	7.5	210	-7.4	..	0.0	..	159	0.6	9.1	5,744	27	29
Chile	15.0	4,600	11.3	5.4	4.1	32.9	111	0.1	18.9	61,793	94	97
China	1,253.6	780	29.4	4.0	2.9	75.9	689	-1.2	6.4	2,257	75	38
Hong Kong, China	6.7	24,710	21.0	8.5	3.7	65.1	..	..	..	..	..	..
Colombia	41.5	2,170	-0.9	7.9	1.8	8.8	529	0.4	9.0	51,349	91	85
Congo, Dem. Rep.	49.8	..	..	2.8	0.1	..	506	0.4	4.5	20,472	45	20
Congo, Rep.	2.9	520	0.7	1.8	0.1	..	630	0.1	4.5	291,000	51	..
Costa Rica	3.6	3,700	17.0	9.5	1.6	..	824	0.8	14.2	31,318	98	96
Cote d'Ivoire	15.5	670	18.5	..	0.9	..	281	3.1	6.2	4,998	77	..
Croatia	4.5	4,510	..	3.9	4.4	4.9	133	-0.1	7.5	15,995	95	100
Cuba	11.2	..	..	..	2.3	..	77	-1.3	17.4	3,400	95	95
Czech Republic	10.3	5,000	19.5	3.2	12.2	71.6	84	0.0	16.1	1,557	..	..
Denmark	5.3	32,050	17.4	6.4	10.9	57.6	33	-0.2	32.5	1,127	100	..
Dominican Republic	8.4	1,920	11.8	7.5	1.7	4.5	280	0.0	31.5	2,499	79	71
Ecuador	12.4	1,380	7.2	4.3	1.8	..	284	1.2	43.6	35,611	71	59
Egypt, Arab Rep.	62.7	1,380	7.0	4.7	2.0	..	1,197	-3.4	0.8	930	95	94
El Salvador	6.2	1,910	-4.7	6.5	1.0	..	582	4.6	0.3	2,876	74	83
Eritrea	4.0	200	-25.8	..	..	..	638	0.3	5.0	2,205	46	13
Estonia	1.4	3,350	12.9	2.5	13.1	93.5	40	-0.6	11.8	8,874	..	..
Ethiopia	62.8	100	-11.4	2.1	0.1	..	513	0.8	5.5	1,752	24	15
Finland	5.2	24,710	18.9	3.4	11.0	19.3	81	0.0	6.1	21,293	100	100
France	58.6	24,170	14.6	5.0	6.0	7.4	79	-0.4	13.5	3,258	..	..
Gabon	1.2	3,280	11.1	4.5	3.0	..	76	0.0	2.8	135,716	70	21
Gambia, The	1.3	330	-4.8	..	0.2	..	430	-1.0	2.3	6,395	62	37
Georgia	5.5	620	..	4.7	0.8	..	279	0.0	2.8	11,610	76	99
Germany	82.1	25,630	14.9	5.5	10.4	54.2	89	0.0	-	2,168	..	..

Country name	Population millions (1999)	GNI per capita \$, (1999)	Genuine savings % GDP (1999)	GDP per unit of energy use PPP\$/Kg oil equiv (1998)	CO ₂ emissions per capita mt (1997)	Share of electricity generated by coal %	Population density, rural people/sq km arable land	Annual deforestation % change, 1990-2000	Nationally protected areas % of land area	Freshwater resource per capita m ³	Access to improved water source % total pop	Access to sanitation % total pop
Ghana	18.8	400	-1.2	4.6	0.3	..	319	1.7	4.9	2,832	64	63
Greece	10.5	12,110	11.2	5.7	8.3	70.3	149	-0.9	3.6	6,548	..	..
Guatemala	11.1	1,680	-1.0	6.1	0.8	..	482	1.7	16.8	12,121	92	85
Guinea	7.3	490	3.6	..	0.2	..	550	0.5	0.7	31,170	48	58
Guinea-Bissau	1.2	170	-6.4	..	0.2	..	298	0.9	..	22,791	49	47
Haiti	7.8	460	-9.3	5.3	0.2	..	895	5.7	0.4	1,551	46	28
Honduras	6.3	770	16.5	4.5	0.8	..	179	1.0	6.0	15,211	90	77
Hungary	10.1	4,640	19.4	4.3	5.9	26.0	76	-0.4	7.0	11,919	99	99
India	997.5	440	9.0	4.3	1.1	75.4	438	-0.1	4.8	1,913	88	31
Indonesia	207.0	580	15.8	4.6	1.3	28.8	695	1.2	10.6	13,709	76	66
Iran, Islamic Rep.	63.0	1,600	-5.5	3.3	4.9	..	145	0.0	5.1	2,040	95	81
Iraq	22.8	..	..	..	4.2	..	104	0.0	0.0	1,544	85	79
Ireland	3.8	21,450	32.2	6.4	10.2	40.4	114	-3.0	0.9	13,859	..	..
Israel	6.1	16,310	3.2	5.7	10.4	69.8	153	-4.9	15.8	180	..	..
Italy	57.6	20,170	14.5	7.4	7.4	11.0	231	-0.3	7.5	2,906	..	..
Jamaica	2.6	2,400	10.9	2.2	4.3	..	664	1.5	0.1	3,618	71	84
Japan	126.6	32,030	16.3	6.0	9.6	19.1	599	0.0	6.8	3,397	..	..
Jordan	4.7	1,630	-3.0	3.6	3.5	..	485	0.0	3.4	148	96	99
Kazakhstan	14.9	1,290	-8.2	1.8	8.0	72.0	22	-2.2	2.7	7,342	91	99
Kenya	29.4	360	0.6	2.0	0.3	..	494	0.5	6.2	1,027	49	86
Korea, Dem. Rep.	23.4	..	..	..	11.4	..	548	0.0	2.6	3,293	..	..
Korea, Rep.	46.9	8,480	..	4.0	9.9	42.8	532	0.1	6.9	1,490	92	63
Kuwait	1.9	..	..	..	28.2	..	821	-5.2	1.5	..	..	..
Kyrgyz Republic	4.9	300	-1.5	4.0	1.4	..	235	-2.6	3.6	9,559	77	100
Lao PDR	5.1	290	..	..	0.1	..	483	0.4	..	55,251	90	46
Latvia	2.4	2,500	11.2	3.4	3.3	1.7	41	-0.4	13.0	14,561	..	..
Lebanon	4.3	3,730	..	3.7	4.3	..	262	0.3	0.5	1,124	100	99
Lesotho	2.1	570	..	..	..	..	466	0.0	0.2	2,470	91	92
Libya	5.4	..	..	..	8.4	..	39	-1.4	0.1	148	72	97
Lithuania	3.7	2,640	7.2	2.7	4.1	..	40	-0.2	10.0	6,732	..	..
Macedonia, FYR	2.0	1,660	..	..	5.5	..	133	0.0	7.1	3,464	99	99
Madagascar	15.1	250	0.0	..	0.1	..	408	0.9	1.9	22,391	47	42
Malawi	10.8	200	-9.0	..	0.1	..	437	2.4	11.3	1,724	57	77
Malaysia	22.7	3,370	34.2	3.9	6.3	3.2	537	1.2	4.6	25,539	..	..
Mali	10.6	240	5.6	..	0.0	..	160	0.7	3.7	9,449	65	69
Mauritania	2.6	390	-16.3	..	1.2	..	233	2.7	1.7	4,387	37	33
Mauritius	1.2	3,540	15.6	..	1.5	..	684	0.6	7.7	1,873	100	99
Mexico	96.6	4,440	11.3	5.2	4.0	9.8	98	1.1	3.5	4,742	86	73
Moldova	4.3	410	4.6	2.2	2.4	10.9	129	-0.2	1.4	2,733	100	..
Mongolia	2.4	390	..	..	3.3	..	67	0.5	11.5	14,632	60	30
Morocco	28.2	1,190	14.8	10.2	1.3	55.3	140	0.0	0.7	1,062	82	75
Mozambique	17.3	220	1.3	2.0	0.1	..	339	0.2	6.1	12,486	60	43
Myanmar	45.0	..	..	..	0.2	..	340	1.4	0.3	22,404	68	46
Namibia	1.7	2,100	3.3	..	..	..	143	0.9	12.9	26,744	77	41
Nepal	23.4	220	0.8	3.5	0.1	..	700	1.8	7.8	8,989	81	27
Netherlands	15.8	25,140	19.2	4.9	10.5	29.9	186	-0.3	6.8	5,758	100	100
New Zealand	3.8	14,000	..	4.0	8.4	3.9	35	-0.5	23.6	85,811	..	..
Nicaragua	4.9	400	-18.3	4.0	0.7	..	87	3.0	7.5	38,668	79	84
Niger	10.5	190	-4.1	..	0.1	..	163	3.7	7.7	3,097	59	20
Nigeria	123.9	250	-18.3	1.2	0.7	..	248	2.6	3.3	2,260	57	63
Norway	4.5	33,470	19.2	4.8	15.6	0.2	123	-0.4	6.8	88,117	100	..
Oman	2.3	..	..	..	8.2	..	2,785	0.0	16.1	426	39	92
Pakistan	134.8	460	0.6	4.0	0.8	0.7	394	1.1	4.8	1,892	88	61
Panama	2.8	3,060	21.2	6.5	2.9	..	244	1.6	19.1	52,437	87	94
Papua New Guinea	4.7	810	..	..	0.5	..	6,379	0.4	0.0	170,258	42	82
Paraguay	5.4	1,570	3.7	5.4	0.8	..	108	0.5	3.5	17,541	79	95
Peru	25.2	2,130	11.3	7.8	1.2	..	189	0.4	2.7	69,203	77	76
Philippines	74.3	1,060	12.3	7.0	1.1	22.9	573	1.4	4.9	6,450	87	83
Poland	38.7	4,060	12.9	3.2	9.2	96.3	97	-0.1	9.6	1,630	..	..
Portugal	10.0	11,010	..	7.0	5.4	31.0	206	-1.7	6.6	7,208	..	..

Country name	Population millions (1999)	GNI per capita \$, (1999)	Genuine savings % GDP (1999)	GDP per unit of energy use PPP\$/Kg oil equiv (1998)	CO ₂ emissions per capita mt (1997)	Share of electricity generated by coal %	Population density, rural people/sq km arable land	Annual deforestation % change, 1990-2000	Nationally protected areas % of land area	Freshwater resource per capita m ³	Access to improved water source % total pop	Access to sanitation % total pop
Puerto Rico	3.9	..	..	..	4.5	..	2,990	0.2	2.1	..	..	..
Romania	22.5	1,510	6.1	3.5	4.9	28.0	107	-0.2	4.7	1,648	58	53
Russian Federation	146.2	1,750	12.2	1.7	9.8	19.4	27	0.0	3.1	30,767	99	..
Rwanda	8.3	240	-7.7	..	0.1	..	929	3.9	14.7	758	41	8
Saudi Arabia	20.2	6,900	-13.3	2.1	14.3	..	82	0.0	2.3	119	95	100
Senegal	9.3	500	7.6	4.4	0.4	..	219	0.7	11.3	4,243	78	70
Sierra Leone	4.9	130	-14.6	..	0.1	..	649	2.9	1.1	32,328	28	28
Singapore	4.0	24,190	41.2	3.2	21.6	..	5,700	0.0	4.8	..	100	100
Slovak Republic	5.4	3,770	19.6	3.2	7.1	23.5	157	-0.3	22.6	15,382	100	100
Slovenia	2.0	9,980	11.1	4.4	7.8	35.5	427	-0.2	6.0	9,318	100	..
South Africa	42.1	3,160	10.5	3.3	7.9	92.6	140	0.1	5.4	1,187	86	86
Spain	39.4	14,800	15.9	5.9	6.6	32.6	63	-0.6	8.5	2,844	..	..
Sri Lanka	19.0	830	15.5	8.0	0.4	..	1,664	1.6	13.5	2,626	83	83
Sudan	29.0	310	..	..	0.1	..	112	1.4	3.6	5,312	75	62
Sweden	8.9	26,750	17.1	3.6	5.5	2.0	53	0.0	8.9	20,096	100	100
Switzerland	7.1	38,230	18.9	7.0	6.0	..	553	-0.4	26.9	7,427	100	100
Syrian Arab Republic	15.7	1,020	-3.9	3.3	3.3	..	151	0.0	..	2,845	80	90
Tajikistan	6.2	170	8.1	..	0.9	..	583	-0.5	4.2	12,763	..	..
Tanzania	32.9	260	-1.5	1.1	0.1	..	595	0.2	15.6	2,703	54	90
Thailand	60.2	2,000	25.8	5.1	3.8	18.3	281	0.7	13.9	6,804	80	96
Togo	4.6	310	-0.7	..	0.2	..	137	3.4	7.9	2,628	54	34
Trinidad and Tobago	1.3	4,750	4.8	1.1	17.4	..	460	0.8	6.0	..	86	88
Tunisia	9.5	2,090	18.1	6.9	2.0	..	116	-0.2	0.3	434	..	..
Turkey	64.4	2,880	15.4	5.8	3.5	32.1	70	-0.2	1.3	3,162	83	91
Turkmenistan	4.8	690	..	1.2	6.7	..	160	0.0	4.2	9,520	58	100
Uganda	21.5	320	-2.0	..	0.1	..	357	2.0	9.6	3,073	50	75
Ukraine	50.0	770	7.5	1.2	7.3	26.5	49	-0.3	1.6	2,795	..	..
United Arab Emirates	2.8	..	..	1.8	32.0	..	1,017	-2.8	..	71	..	..
United Kingdom	59.5	23,590	7.7	5.4	8.9	34.5	100	-0.8	20.7	2,471	100	100
United States	278.2	31,920	8.3	3.8	20.1	52.7	36	-0.2	13.4	8,906	100	100
Uruguay	3.3	6,240	5.1	9.9	1.8	..	24	-5.0	0.3	17,809	98	95
Uzbekistan	24.4	640	-4.6	1.1	4.4	4.1	336	-0.2	2.0	668	85	100
Venezuela	23.7	3,730	1.7	2.4	8.4	..	120	0.4	36.6	35,686	84	74
Vietnam	77.5	370	11.4	4.0	0.6	16.1	1,080	-0.5	3.1	11,497	56	73
West Bank and Gaza	2.8	1,800	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	17.0	360	-19.4	3.7	1.0	..	838	1.8	..	241	69	45
Yugoslavia, FR (Serbia/Montenegro)	10.6	..	..	..	4.7	..	..	0.0	3.3	17,709	..	..
Zambia	9.9	320	-8.7	1.2	0.3	0.5	111	2.4	8.6	11,739	64	78
Zimbabwe	11.9	530	5.1	3.3	1.6	71.5	240	1.5	7.9	1,680	85	68
World	5,978.1	4,990	17.4	4.2	4.1	..	520	0.2	6.5	8,240	81	56
Low Income	2,412.3	410	15.7	3.4	1.1	..	508	0.8	5.7	6,196	76	45
Middle Income	2,668.7	1,910	22.7	3.9	3.8	..	583	0.1	5.2	9,540	81	59
Lower Middle Income	2,029.9	1,090	26.6	3.6	3.4	..	637	-0.1	4.9	7,688	80	52
Upper Middle Income	638.8	4,530	19.7	4.3	5.2	..	187	0.5	5.8	15,462	87	81
Low and Middle Income	5,081.0	1,200	21.6	3.7	2.5	..	542	0.3	5.4	7,949	79	52
East Asia & Pacific	1,836.6	1,010	28.0	4.2	2.8	..	691	0.2	7.0	..	75	47
Europe & Central Asia	474.4	1,990	23.9	2.3	6.9	32.5	125	-0.1	3.3	12,797	90	..
Latin America & Carib.	508.0	3,640	15.1	5.7	2.8	..	251	0.5	7.4	27,934	85	78
Middle East & N. Africa	290.0	2,000	38.1	3.5	4.0	..	534	-0.1	2.2	1,147	89	83
South Asia	1,329.3	440	10.5	4.5	0.9	..	537	0.1	4.5	2,854	87	36
Sub-Saharan Africa	642.8	490	12.3	2.4	0.8	..	369	0.8	6.2	8,248	55	55
High Income	897.1	26,430	..	4.6	12.8	..	178	-0.1	10.2	..	..	..
Europe EMU	292.8	22,250	15.7	5.6	8.2	27.4	141	-0.3	8.1	3,769	..	..

About the data

Genuine savings is an indicator of economic and environmental sustainability derived from the national accounts. It measures the change in value of the total wealth—produced, natural, and human capital—upon which development depends. The link to sustainable development is direct, in that a decline in total wealth implies a decline in future welfare—this is the standard economic definition of unsustainability.

GDP per unit of energy use provides a measure of energy efficiency. Differences in this ratio over time and across countries reflect in part structural changes in the economy, changes in energy efficiency of particular sectors, and differences in fuel mixes.

Carbon dioxide emissions account for the largest share of greenhouse gases, which are associated with global warming. Anthropogenic CO₂ emissions result primarily from fossil fuel combustion and cement manufacturing. In combustion, different fossil fuels release different amounts of CO₂ for the same level of energy use. Burning oil releases about 50 percent more CO₂ than burning natural gas, and burning coal releases about twice as much. Cement manufacturing releases about half a metric ton of CO₂ for each ton of cement produced.

Use of energy in general, and access to electricity in particular, are important in improving people's standard of living. But electricity generation can also damage the environment. Whether such damage occurs largely depends on how electricity is generated. For example, **burning coal** releases twice as much carbon dioxide—a major contributor to both global warming and local air pollution—as does burning an equivalent amount of natural gas.

Rural population density provides an indicator of pressure on natural ecosystems and resources such as soil and forests.

Deforestation is a major cause of biodiversity loss, and habitat conservation is vital for stemming this loss. According to the latest FAO assessment, the global rate of net deforestation has slowed to 9 million hectares a year, a rate 20 percent lower than

that previously reported. Due to space limitations, the subtotals for natural and plantation forest do not appear here; the aggregate numbers may underestimate the rate at which natural forest is disappearing in some countries.

Conservation efforts have traditionally focused on **protected areas**, which have grown substantially in recent decades. Designating land as a protected area does not necessarily mean that protection is in force, however. Many protected areas are only "paper parks." The data reported here are for protected areas of at least 1,000 hectares. For small countries that may only have protected areas less than 1,000 hectares, this definition will result in an underestimate of the extent and number of protected areas.

Almost one third of the world's population faces water scarcity or water stress, especially in Africa, the Middle East, Latin America and the Caribbean, and large parts of South Asia. The data on **freshwater resources** are based on run-off into rivers and recharge of groundwater. These estimates are based on different sources and refer to different years, so cross-country comparisons should be made with caution. Because data are collected intermittently, they may hide significant variations in total renewable water resources from one year to the next. The data also fail to distinguish between seasonal and geographic variations in water availability within countries.

Access to safe water sources and to sanitation are important indicators of progress in implementing national health strategies. Diseases transmitted by feces are common in developing countries, largely because of the lack of clean water and basic sanitation. Drinking water contaminated by feces deposited near homes and an inadequate water supply cause diseases accounting for 10 percent of the disease burden in developing countries. Access to drinking water from an improved source does not ensure that it is adequate or safe. Information on access to an improved water source is extremely subjective, and terms such as safe, improved, and adequate may have very different meanings in different countries, despite WHO definitions. Even in high-income countries, treated water may not be safe to drink.

Definitions and data sources

Population includes all residents who are present regardless of legal status or citizenship—except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of their country of origin. The values shown are midyear estimates. (The World Bank, United Nations; the data are for 1999.)

GNI per capita is gross national income (formerly called gross national product or GNP) divided by midyear population. GNI is the sum of gross value added by all resident producers plus any taxes (less subsidies) that are not included in the valuation of output plus net receipts of primary income (employee compensation and property income) from nonresident sources. GNI per capita is in current US dollars, converted using the World Bank Atlas Method; see the statistical methods in *World Development Indicators 2001*. (The World Bank, OECD, United Nations; the data are for 1999.)

Genuine domestic savings are equal to net domestic savings, plus education expenditures and minus energy depletion, mineral depletion, net forest depletion, and carbon dioxide damage. (The World Bank; the data are for 1999.)

GDP per unit of energy use is the purchasing power parity (PPP) GDP per kilogram of oil equivalent of commercial energy use. PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GDP as a U.S. dollar in the United States. (The International Energy Agency, the World Bank; the data are for 1998)

Carbon dioxide emissions per capita include emissions from the burning of fossil fuels and the manufacture of cement. They include carbon dioxide produced during consumption of solid, liquid, and gas fuels and gas flaring. (Carbon Dioxide Information Analysis Center; the data are for 1997.)

Share of electricity generated by coal refers to the contribution of coal, as an input, in the generation of electricity. (The International Energy Agency; the data are for 1998)

Rural population density is the rural population divided by the arable land area. Rural population is estimated as the difference between the total population and urban population (World Bank estimates; the data are for 1998).

Annual deforestation refers to the permanent conversion of natural forest area to other uses, including shifting cultivation, permanent agriculture, ranching, settlements, and infrastructure development. Deforested areas do not include areas logged but intended for regeneration, or areas degraded by fuelwood gathering, acid precipitation, or forest fires. Negative numbers indicate an increase in forest areas. (Food and Agriculture Organization; the data are for the period 1990-2000)

Nationally protected areas are totally or partially protected areas of at least 1,000 hectares that are designated as national parks, natural monuments, nature reserves or wildlife sanctuaries, protected landscapes and seascapes, or scientific reserves. (The World Conservation Monitoring Center; the data are for 1999)

Freshwater resources refer to total renewable resources, which include flows of rivers and groundwater from rainfall in the country, and river flows from other countries. Freshwater resources per capita are calculated using the World Bank's population estimates. (The World Resources Institute; the estimates are for 1999)

Access to an improved water source refers to the percentage of the population with reasonable access to an adequate amount of water from an improved source, such as a household connection, public standpipe, borehole, protected well or spring, or rainwater collection. Unimproved sources include vendors, tanker trucks, and unprotected wells and springs. Reasonable access to an adequate amount is defined as the availability of at least 20 liters a person a day from a source within one kilometer of the dwelling. (World Health Organization; the data are for 2000)

Access to sanitation is the share of the population with access to at least adequate excreta disposal facilities (private or shared, but not public) that can effectively prevent human, animal, and insect contact with excreta. Improved facilities range from simple but protected pit latrines to flush toilets with a sewerage connection. To be effective, facilities must be correctly constructed and properly maintained. (World Health Organization; the data are for 2000)

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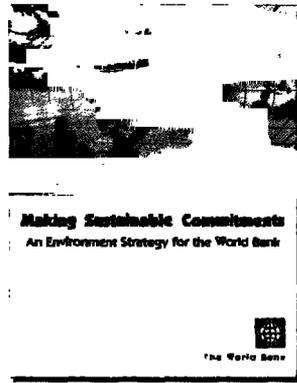
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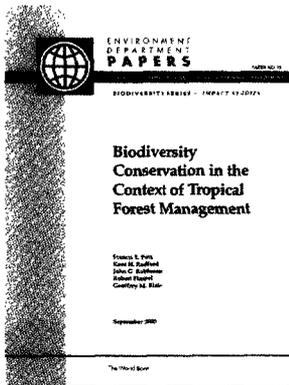
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