Annex D

Natural Resource Management

NATURAL RESOURCES, POVERTY, AND SUSTAINABILITY

Natural resources provide fundamental support to life and economic processes. Soils are the foundation of agriculture, which in turn is the basic building block in the livelihoods of all people. Forests help protect water sources, reduce the risks of natural disasters such as landslides and flooding, are home to at least 80 percent of remaining terrestrial biodiversity, and are a major carbon sink that mitigates climate change. More than 1.6 billion people depend on forests for their livelihood in some way. Water is essential for the sustenance and health of humankind and indeed of all species. It is an important input for agriculture and many industries and a significant sink for waste discharges. Coastal and marine ecosystems include some of the most diverse and productive habitats on earth. Marine fisheries are an important part of the world's food supply. Ecological processes maintain soil productivity, recycle nutrients, cleanse air and water, and regulate climatic 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. Properly managed, natural resources provide the foundation for maintaining and improving the quality of life of the world's population and can make invaluable contributions to sustainable growth.

This foundation is coming under increasing pressure from mismanagement, a growing population, higher levels of economic activity per capita, and the complex interactions of these phenomena. Evidence of the resulting degradation of natural resources is all around us. 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. Erosion, salinization, compaction, and other forms of degradation affect 30 percent of the world's irrigated lands, 40 percent of rainfed agricultural lands, and 70 percent of rangelands. More than one fifth of the world's tropical forests has 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. In 1990, 28 countries, with a total population of about 335 million, experienced

"water stress"—availability of less than 1,700 cubic meters per person per year. By 2025, this figure is expected to grow to around 50 countries, affecting some 3 billion people. Country figures, moreover, mask widespread localized water shortages. 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.

Degradation of the natural resource base is having a substantial impact on the economies of developing countries. It threatens the quality of life directly. Deforestation increases vulnerability to natural disasters, as shown by the devastating impacts of Hurricane Mitch in Central America. Even in the absence of hurricanes, flooding and landslides have been regular events, causing widespread loss of life and damage to crops and infrastructure. The increasing scarcity of water and fuelwood forces many—primarily women and children—to walk long distances to collect their daily supplies. The World Health Organization (WHO) estimates that more than 5 million people die each year from diseases caused by unsafe drinking water and lack of water for sanitation and hygiene. Smoke from fires set to clear forest areas causes widespread respiratory problems. These are real economic, social, and human costs, even though they seldom appear in national accounts.

Degradation of the natural resource base also threatens long-term growth. Improving agricultural productivity is an essential part of development and poverty alleviation strategies in many countries, but degradation of soil and water resources threatens this objective. In parts of the Pakistani Punjab, for example, salinization and other problems in irrigated areas have offset many of the productivity gains resulting from the Green Revolution. Deforestation is harming growth even from the narrow perspective of the timber industry; in countries that have mismanaged their forest resources, mills soon find themselves bereft of supplies. The balance sheet becomes even bleaker when the costs imposed on other sectors are added—higher risk of floods, sedimentation that reduces hydroelectric power generation and availability of water for irrigation, and loss of fisheries. Many inland and marine fisheries have collapsed completely, and in many countries, the sector only survives with massive and onerous government subsidies. Taking this depletion into account can subtract several percentage points from gross domestic product (GDP).

The impact of this degradation is particularly severe for the poor, who tend to rely heavily on fragile natural resources for their livelihoods. Moreover, their claim to these resources is often tenuous. Because they are at a social and economic disadvantage, the poor often reside in fringe areas, where access to potable drinking water and adequate sanitation facilities is limited and higher mortality, morbidity, and disease rates prevail, or in highly vulnerable areas such as floodplains, coastal areas, and degraded hillsides, with a diminished capacity for buffering against natural and man-made shocks and disasters.

ENHANCING THE SUSTAINABILITY AND THE POVERTY IMPACT OF NRM: KEY STRATEGIC CHOICES

Natural resource management (NRM) refers to the utilization of natural resources such as land, water, air, minerals, forests, fisheries, and wild flora and fauna. This discussion begins by identifying key concerns and policy approaches to improving NRM and ameliorating the impact of natural resource use

on poverty. It then reviews the key issues arising in the context of some of the most important natural resources: land, forests, and water. The perspective taken by the strategy is that NRM should contribute to poverty alleviation and that natural resources should be used in a sustainable manner to enhance human welfare.

Sustainable NRM and poverty alleviation are generally highly compatible. The poor are usually most directly dependent on natural resources for their livelihoods, and most vulnerable to the consequences of natural resource degradation. Improving NRM can thus make substantial contributions to helping improve the welfare of the poor. Sustainable intensification of agriculture can improve the income of poor farm households in both the short and long terms. It can also help reduce pressures to expand into remaining forest areas, thus avoiding increased downstream damage from flooding and sedimentation and preserving biodiversity. Nevertheless, difficult tradeoffs may be encountered at times. Reducing downstream damage may require restricting the land-use options of poor farm households in the upper watershed. Unless means are found to compensate these households, such restrictions are likely to be either ineffective or inequitable. Improved NRM can result in substantial economic gains, and these gains will often benefit the poor directly. But when they do not, the poor should not be asked to pay for them.

New evidence supports a shift in the way we understand NRM and the links between poverty and environmental degradation—toward a focus on how microlevel institutions mediate the impacts of the macro environment to foster sustainability. This approach starts with an analysis of how people access and use resources as part of their overall livelihood strategy, and how they adapt to the conditions created by macro policy and political frameworks. This lens broadens the analysis of local options for resource management away from NRM and agricultural strategies, to look at the multiple, flexible livelihood strategies that people pursue and the institutional and cultural context in which they live. (The U.K. Department for International Development, or DFID, has described this approach as the "livelihoods approach.") It also explicitly assesses the local institutions and political economy that determine who in the society—men, women, indigenous people, farmers, or industrialists—have resource entitlements and access to resources and capital.

Studies using this approach have documented the importance of social capital at multiple institutional levels; the role of environmental entitlements, including land and resource tenure; the values of social and cultural preferences; the income strategies that factor in vulnerability to cyclical events or political risks; and the dynamics of urban-rural remittances from migrants still culturally tied to rural areas. These studies offer a rich set of examples of ways in which local people mitigate poverty induced by environmental degradation or limited resource access. They also show how local people have reversed patterns of degradation despite less-than-perfect policy and legal conditions.

These lessons point to three main strategic themes that need to be addressed to enhance the sustainability and poverty impact of NRM:

1. *Incentives.* Decisions on NRM are not made by governments or international organizations; they are made by millions of individual decisionmakers—by farmers who decide what crops to plant and what inputs to use, or who decide whether to increase their cultivated area

by clearing forests; by developers who decide where to locate housing or industry; and by fishers who decide what type of fishing gear to use, where to fish, and how many days to spend at sea. The incentives faced by these decisionmakers are critical to NRM. Inefficiencies in the utilization of natural resources often arise because private and social prices differ and markets are incomplete or distorted. The result is lower total welfare, particularly for the poor. A fundamental distinction needs to be made between the on-site and off-site effects of natural resource problems.

- *On-site effects.* In the case of on-site effects, decisionmakers already have powerful incentives to address natural resource problems, since they are affected directly. The main need in this case is to remove obstacles to the proper functioning of existing incentives. This often includes the introduction of exclusive use rights, as discussed below.
- *Off-site effects.* Conversely, in the case of off-site effects, decisionmakers usually have little or no incentive to address natural resource problems, as the consequences do not affect them. In such situations, incentives need to be created. Policymakers should (a) remove policy-induced distortions that undermine sound NRM; (b) complement market signals with taxes or fees that reflect social opportunity costs, or payments that reflect social benefits; and (c) selectively regulate the remaining externalities.

2. *Property rights.* Unsustainable and inefficient utilization of natural resources often occurs because property rights are not complete, exclusive, enforced, and transferable. The issue of property rights is particularly salient in the case of open-access resources, such as fisheries. In addition, property rights that do fulfill these conditions are often quite skewed. The result is a "smaller pie" than theoretically possible and a "smaller piece of the pie" for the poor. Although secure property rights do not guarantee greater resource conservation, in many circumstances they can play an important role. Policymakers' first order of business should be to (a) clarify property rights where they do not exist, are obscure, or are in dispute; (b) enforce property rights to support better NRM and thereby contribute to poverty alleviation; and (c) selectively regulate the remaining externalities, using the right incentives.
3. *Empowerment.* Inefficiencies and inequities in the utilization of natural resources often arise because many important stakeholders have little say in their management. Several strands of work are required to build social capital and support for honest and transparent institutions that have the confidence of the local population. Particular care is needed when natural resources are managed by indigenous peoples.

KEY NATURAL RESOURCE ISSUES

Land

The land resources of the world are limited and at constant risk of being further degraded. Land degradation affects agricultural productivity and is therefore a major factor in food security and rural poverty. Although productivity trends indicate that aggregate global food supply is not seriously threatened in the short term, some regional trends are of great concern: per capita food production in Africa has been slowly dropping during the last 30 years, and in the former Soviet Union food production has decreased significantly since 1990. Problems are particularly acute in dryland areas. Doubling food production by 2050 to meet human needs will create new pressures. It should also be noted that increases in global food supply often come at a heavy environmental cost: pesticide pollution, water table

depletion, biodiversity losses, and land degradation as a result of inappropriate land-use systems.

A major change toward sustainable land resources management (SLRM) is needed to protect and enhance the productive base of land resources and the livelihoods of the people who depend on them. To achieve this in countries with high poverty rates requires addressing a wide range of issues, including land policy issues (property and access rights, and land-use planning); key sector policies (including price policies and other policies that affect incentives, as well as infrastructure policies and investments); and changes in governance processes (decentralization and empowerment of local communities).

The United Nations Convention to Combat Desertification (CCD) places primary responsibility for action on land degradation with the governments of affected countries. Effective action requires government commitment, political will, and capacity. Environmental issues, including follow-up to the CCD, are often the domain of specialized environmental agencies rather than line ministries such as ministries of agriculture. As a result, these issues often have little impact on macroeconomic and sector policies. Focusing more attention on how government commitment is created and sustained—the political economy of land management—is therefore critical. An efficient land policy framework is needed, including security of land rights and land access, establishment of the institutional infrastructure to administer land rights, and facilitation of land markets and transferability of land rights.

Participation by rural communities is crucial to improved land management (see box D.1). To be effective, policies must be based on the knowledge, needs, priorities, and decisions of people living on and using the land. These communities, many of them very poor, have a strong interest in preserving the resources that provide for their survival, but they are often constrained by inappropriate government or donor policies. Identifying local preferences through direct consultation and incorporating indigenous knowledge are particularly important in cases involving indigenous peoples. SLRM hinges on a new approach of agricultural intensification that combines three basic principles: integrating the biophysical and socioeconomic driving forces involved; fostering a people-centered learning and participatory approach; and bringing recognizable and early productivity benefits to farmers ("SLRM for business").

BOX D.1
Community-based natural resource management

Natural resource management projects increasingly try to incorporate a role for communities in the design and implementation of NRM projects. For example, the Mauritania Rainfed Natural Resource Management Project (fiscal 1997) is financing the first 5 years of a 20-year long-term program to activate a process of natural regeneration of land fertility, rangeland vegetation, and livestock and forest production. It will do this by encouraging the emergence of better-adapted and more sustainable approaches to resource use. This is likely to result in greater biodiversity conservation while generating more income and a better quality of life for the local people. The project, which will provide rural communities with effective empowerment in the management of their natural resources, is active in 47 villages in three regions of the country. A number of microprojects (dikes, small dams, wells, women's vegetable gardens, nurseries of indigenous tree species) are under way with the active participation of local communities.

A strategy for land resources management should be based on a fourfold approach:

1. *Support the new approach to agricultural intensification and environmental protection* by (a) managing biological interactions that favor crop and animal productivity in a profitable and ecologically sensitive manner, and (b) empowering rural producers and their organizations or communities through knowledge acquisition and capacity building
2. *Change the role of state and public services* by implementing a decentralization process with full participation of the main stakeholders in land use and land management
3. *Contribute to and implement international agreements such as the CCD,* which are conducive to this change in mindset and institutional shift
4. *Monitor downstream and off-site impacts* from land use practices so that a more complete assessment of their costs and benefits can be made and measures can be taken to encourage beneficial uses and discourage harmful ones.

Forests

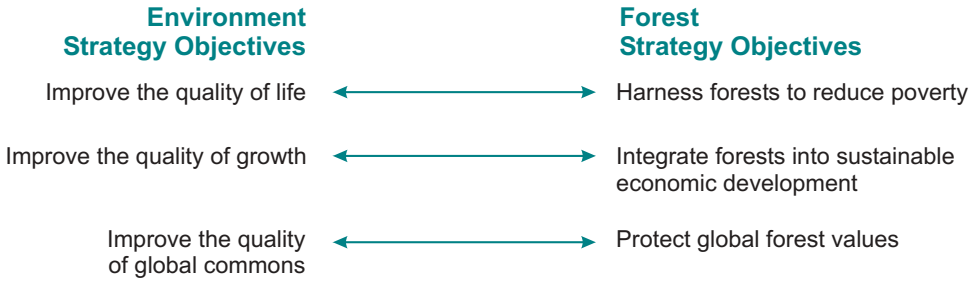
Forests have a major role to play in poverty alleviation, sustainable economic growth, and the provision of ecosystem services. Of the world's 1.2 billion extreme poor—those living on $1 or less a day—90 percent depend on forests for their income or are significantly dependent on forest resources, including agroforestry and tree crops. The Bank's 1991 forestry strategy and 1993 policy sought to protect forests by adopting a conservation-oriented approach. A review of the Bank's performance by the Bank's Operations Evaluation Department (OED) concluded that although the overall goals set out were laudable, they were misplaced to some extent and that implementation has been only modest. The strategy overemphasized the objective of halting deforestation in the tropics, at the expense of focusing on poverty alleviation and the broader spectrum of forest types. Specific policy requirements created risk-averse behavior and avoidance of difficult problems in the sector, and this shortcoming was compounded by the lack of a clear and implementable strategy. The OED recommended that the Bank modify its policy objectives for forests and expand its coverage. As a multisectoral agency with major activities across economies, the Bank needs a strategy that comprehensively deals with all potential impacts on forests and forest peoples, rather than one focused only on its fairly small forestry investment portfolio. To be effective, the Bank will also need to review its objectives for and approaches to forests and forest peoples. If it does not, it will fail to generate significant improvements in forest outcomes and will fall far short of its larger institutional goals of poverty alleviation and sustainable economic growth. It will also miss its opportunity to make a major contribution to the protection of the important global values embodied in the world's forests.

On the basis of the OED review, specially commissioned analytical studies of key issues, a major process of consultation with stakeholders, and the input of Bank's forest sector operational staff, a new strategy has been formulated. The three basic objectives of the new forest strategy are closely linked with the key objectives of the Bank's Environment Strategy (see box D.2.). The three goals are as follows:

1. *Harness the potential of forests to reduce poverty* by creating opportunity, empowerment, and security for rural people, especially the rural poor and indigenous groups, in the use and management of forests. Especially important are joint and collaborative forest management systems and the

BOX D.2
Linkages between the Environment Strategy and the revised forest strategy

The World Bank's Environment Strategy is closely linked with sector strategies, such as forestry, rural development, and water resources management. For example, the main elements of the revised forest strategy correspond closely with the main objectives of the Environment Strategy. Both strategies focus on poverty, growth, and global issues.



Other common links exist between the strategies in their recognition of cross-sectoral issues, mainstreaming into policy dialogue, governance, selectivity, and better cooperation with development partners.

identification of priority areas in which the Bank will seek to have maximum impact on poverty.

2. *Integrate forests into sustainable economic development.* The approach described here is based on the fact that forests are seriously undervalued—and are utilized wastefully and unsustainably—in many economies, largely as a result of governance failures and perverse incentives. The major directions to be followed will be to develop markets for environmental services; to encourage good forest management; to improve governance (including control of illegal activities); to promote active participation in management decisionmaking by all stakeholders; and to manage adverse cross-sectoral and macroeconomic impacts on forest resources.
3. *Protect vital global forest values.* The most important challenge in this area is to create effective markets for global values and other externalities from forests so that local and national stakeholders will benefit from protecting and managing the resource.

Water, coastal, and marine resources

The world is experiencing a systemic water crisis as a result of unsustainable use and management of water resources. A rapidly increasing population is exacerbating the traditional problems of providing water supply and sanitation services. More than 1 billion people do not have access to potable water supplies, and 3 billion do not have adequate sanitation. The world's major lakes, rivers, and aquifers are under severe stress. The water sector also faces new threats and challenges, including urbanization; overabstraction and regulation of surface water; overpumping of groundwater; pollution from point and nonpoint sources; loss of aquatic biodiversity; conversion of wetlands, mangroves, and other coastal habitats; introduction of alien and exotic species and invasive weeds; emergence of disease and other marine pathogens; and increasing interbasin water transfers. These threats, and the resulting degradation, are having a severe impact on quality of life and on growth prospects. The

impact is disproportionately felt by the poor, who directly or indirectly depend on terrestrial and aquatic ecosystems for income generation and are least able to adapt to reductions in water quality and availability.

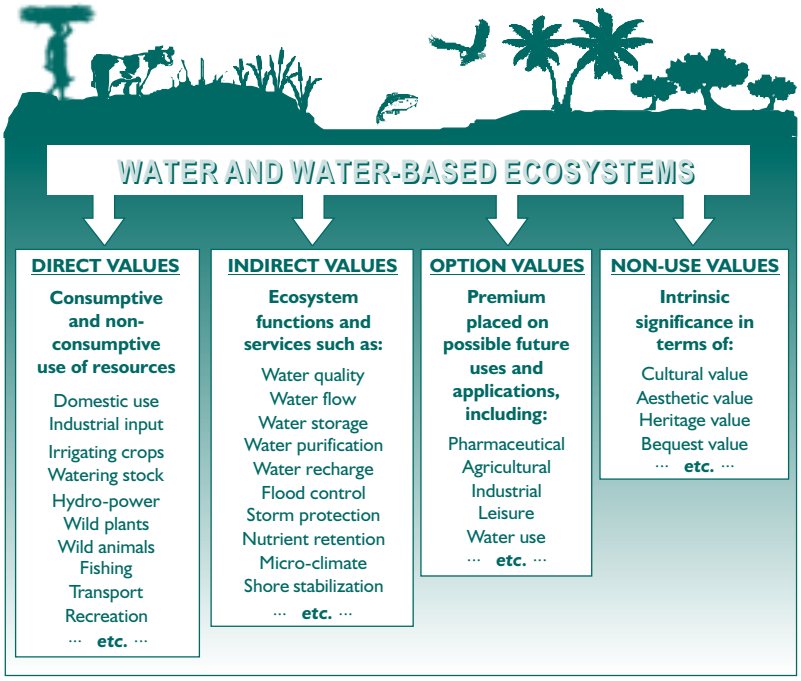
The key future challenges include promoting a sound institutional environment; improving economic analysis of management options; improving transboundary water management; addressing social and sustainability issues in new dam construction; halting degradation and loss of ecosystem functions and the deterioration of freshwater lakes and reservoirs, wetlands, mangroves, and coral reefs; improving drainage; and addressing the water resources implications of climate change.

Environmental sustainability is a fundamental element of sound water resource management. The integration of environmental quality objectives remains an important challenge in the water policy reform and management process. Environmental assessments have proved to be a useful tool for screening and predicting potential impacts. However, lack of clear environmental sustainability criteria for the water sector, capacity constraints, and lack of commitment to follow through with politically difficult decisions hinder the effective integration of environmental issues in water projects. As a result, the influence of these studies on project decisionmaking, especially the analysis of alternatives, is often limited.

Demand management is part of water supply and sanitation policy and is an area of increasing emphasis in irrigation activities; most water supply and sanitation projects and many irrigation projects emphasize some elements of demand management. But in a number of areas, such as sanitation, drainage, and water quality management, considerable work remains to be done. Water allocation requirements for environmental uses, including the protection of biodiversity, should be given increased priority in light of rising demands for water and frequent problems resulting from degradation of water quality (see figure D.1).

The Bank's Strategic Framework for Action on water provides a basis for achieving the broad objective of systematically mainstreaming environmental quality objectives into water resource planning, development, and management programs and investments. It calls for a set of complementary

Figure D.1
The value of water and water-based ecosystems



measures to strengthen environmental management capacity, as follows:

- Promote a comprehensive approach to water resource management that includes (a) treating water as a unitary resource; (b) supporting a shift from curative to preventive actions; (c) improving the integration of environmental quality objectives into regional and national water resource management strategies, river basin planning, investment projects, and policy reforms and actions, and changing the safeguard policy orientation from "do no harm" to "promotion of improved development"; and (d) adopting environmental sustainability criteria for the water sector.
- Support actions to more fully integrate water quality concerns into water supply and sanitation efforts. Water sector reforms should be complemented by an effective regulatory framework and incentive structure for managing the water resource base and ensuring its sustainability.
- Recognize the ecological uses of water. Environmental flow assessments should be conducted as integral parts of water resource operations (including environmental assessment).
- Improve transboundary water management. Numerous river basins, groundwater aquifers, and coastal and marine environments cross national boundaries, creating a need for cooperative management. Transboundary waters have often been a source of conflict, but they can also stimulate joint efforts. The primary management challenges include allocation and sharing of water, management of water quality, navigation and flood control, and halting the degradation of aquatic ecosystems.

Effective implementation of the Strategic Framework for Action calls for strengthened environmental management capacity, use of interdisciplinary teams, knowledge sharing, analytical work, and strategic partnerships. To accomplish these objectives will require a long-term commitment by the Bank and allocation of resources for promoting policy dialogue, for cooperatively undertaking sector studies, and for preparing and supervising lending operations and providing nonlending services.

Biodiversity

The vast array of the world's animals and plants, the genetic information they contain, and the dynamic and interacting communities they form are known collectively as biodiversity. Biodiversity therefore permeates all levels of NRM, since its individual elements interact in intricate ways to form forests and grasslands, maintain soils, and provide ecosystem services, among other fundamental functions. Most biodiversity is uncataloged. Some of the known genes, species, and communities have critical uses—as food, commodities, medicines, moderators of climate and hydrology, pollinators, or soil formers—but the contributions made by others are insufficiently known. The planet is losing species at a rate higher than at any time in its history—an "extinction spasm" that undermines future development options.

The sharp distinction often made between "local" and "global" environmental issues is an artificial construct (see annex I). Understanding the linkages between various issues and properly identifying their influence on the local-to-global continuum can help diagnose problems, identify solutions, and find common ground between advocates of various approaches. Biodiversity provides two special challenges for NRM: (a) most of its benefits are economic externalities, that is, they do not appear as financial values on a market where they can be

easily observed, and (b) some benefits of biodiversity accrue over the long term, while the cost of conservation may be more immediate. Another consideration is that many people consider biodiversity as having intrinsic value, for moral, religious, or cultural reasons.

The perception that biodiversity is a global issue stems from the fact that its widespread decline has cumulative consequences at the global level. Most of the benefits and costs resulting from biodiversity conservation, however, accrue primarily at the local and national levels. Important national benefits justify many interventions—such as protection of watersheds with natural forests, which reduce river siltation and support fish populations harvested by riparian peoples—even in the absence of international financing. Pollination, for example, is important for local crops, and wetland ecosystems can play an important role in purifying water. Nature-oriented tourism has the potential to be an important source of income and already is in countries such as Costa Rica and Kenya. Dive tourism is a growing segment of the tourism market in coral reef nations, particularly in the Caribbean and the Indo-Pacific. But some of the benefits of improving biodiversity conservation and its sustainable use—such as medicines and crops developed as a result of access to new genetic resources—accrue in principle to mankind as a whole. When these global benefits cannot be easily internalized, global financing mechanisms such as the Global Environment Facility (GEF) can be used to support the path toward sustainability.

The World Bank recognizes the need to support the obligations that its clients have assumed under the Conventions on Biological Diversity and Climate Change, and it is also committed to serving as an implementing agency for the GEF. These facts have been taken into account in the strategy, emphasizing positive linkages and the opportunities to reduce poverty that these commitments offer.

FUTURE DIRECTIONS FOR THE WORLD BANK

The analysis summarized above points to several key new directions for better addressing the links between poverty and NRM:

Take a holistic approach. Clearly, there is a need for a holistic approach that can (a) integrate economic and social factors into ecosystem management goals and address poverty alleviation and environmental conservation issues simultaneously, and (b) consider NRM problems at the appropriate management scale. Lessons from NRM projects show that it may be necessary to define the management scale beyond the boundaries of administrative units to encompass an entire ecosystem or other natural unit, such as a watershed. For example, water is a unitary resource that needs to be addressed in a comprehensive manner, recognizing and operationalizing the important linkages between upstream actions and their downstream consequences for river basins, lakes, and coastal and marine environments.

Take a long-term perspective. NRM problems are almost always long-term problems and require both a long-term perspective and suitable tools. Such tools include Adaptable Program Loans (APLs) and the creation of trust funds and other innovative financial mechanisms that can finance NRM activities and recurrent costs in perpetuity (see box I.1 in annex I).

Move from curative to preventive actions. The costs of preventing resource degradation are often small compared with the costs of remediation and reha-

bilitation. A major challenge for NRM organizations and programs is to increase the level of effort for preventive measures while maintaining support for curative interventions in degraded areas.

Let communities drive implementation. As in other sectors, more efficient and equitable ways of implementing NRM projects are necessary. In light of the site-specificity of NRM problems and the need to consider the incentives of local stakeholders and empower them to take action, Community-Driven Development (CDD) has substantial promise as an approach to implementing programs (see box 2.1 in chapter 2 and box A.3 in annex A). An important caveat is that when off-site impacts are considerable, external transfers may be necessary to complement local management.

Increase the role of the private sector. Improving NRM requires a careful assessment of which functions need to be fulfilled by governments and which can be undertaken more effectively by the private sector. It is essential, however, to ensure that greater private sector involvement is complemented by an effective regulatory framework.

Generate multiple benefits. Shifts in market forces, globalization, and demographic forces present new opportunities for enhanced NRM. Some of these opportunities relate to the preferences of rich-country consumers for commodities that have been produced in an environmentally benign manner, while others build on the overlap that often exists between better soil management, maintenance of forest cover, and reduced pesticide use. For example, shade-grown coffee provides greater social benefits related to employment and health, increases farm economic returns, and enhances habitats for biodiversity conservation.

Build on "global to local" synergies. As an implementing agency of the GEF, the World Bank is in a good position to support interventions that simultaneously generate local benefits (that can be supported by the Bank and IDA) and global benefits (that can be supported by the GEF on an incremental cost basis). The growing mainstreaming of the GEF's biodiversity portfolio within productive sectors, and its increased association with NRM loans, provide concrete examples of this approach.

Carrying out monitoring and evaluation. Monitoring and evaluation is indispensable, both at the micro level of individual interventions, to assess their effectiveness and allow for course corrections if necessary, and at the broader macro level of overall trends, to diagnose problems, identify the need for interventions, and prioritize interventions. Monitoring can also help ensure that environmental concerns are better integrated into economic policymaking by showing more clearly how environmental quality and NRM affect welfare and economic development.

Together, these aspects of implementation present a formidable agenda for NRM operations. They can only succeed in a policy environment that has addressed the fundamentals of poverty alleviation: clear property rights to natural resources, conducive incentives, and local empowerment for NRM. At the same time, they need to build on the strategic shifts and opportunities provided by holistic and long-term approaches, community-driven implementation, generation of multiple benefits, and the exploitation of synergies in the local-to-global continuum.

To properly promote these policy and programmatic shifts, the World Bank itself needs to make shifts that reflect these challenges. These alignments

need to be supported by the proper enhancement of financial resources, management buy-in, and staffing. The following lines of action were identified as prerequisites for the promotion of the strategic shifts identified in the strategy:

- *Increase internal awareness.* It is important to demonstrate, through action and generation of experience, that these shifts indeed provide poverty reduction impacts and enhance social, environmental, and economic sustainability.
- *Mainstream with measurable targets.* Mainstreaming must be promoted deliberately, with measurable targets and built-in accountabilities. Staff time needs to be made available to systematically evaluate and strengthen the existing toolkit (economic and sector work, CASs, loans, and grants). Such proactive mainstreaming can only be possible through internal incentives for staff to participate more actively in learning, awareness raising, research, exchange of lessons learned, and quality enhancement.
- *Strengthen selected partnerships.* The World Bank is well equipped with the tools to support the policy and programmatic shifts presented above. Nevertheless, there will be instances in which our impacts can be enhanced through stronger partnerships in which clear and measurable outcomes can be identified and which support the overall direction of the Strategy. One such partnership (the GEF) places the Bank in an excellent position to support the dual local-global agendas demanded by our clients (see annex I). In other cases, innovative approaches, as exemplified by the recent launch of the Critical Ecosystem Partnership Fund (CEPF), can provide leverage in a cost-effective manner. (See annex K for a list of external partnerships.)
- *Monitor progress.* Mainstreaming needs to be promoted against a backdrop of measurable indicators of progress and monitored periodically. There is a need to develop methodologies to measure mainstreaming and to strengthen the management of knowledge that can support the goals of the strategy.