

Why has environmental sustainability been elusive?

It is a paradox that environmental degradation continues in most regions of the world despite more than three decades of unprecedented international attention. The 1972 Stockholm Conference on the Human Environment focused world attention on the human environment; the 1987 Brundtland Report (WCED 1987) followed, culminating in high-level commitments made at the 1992 Earth Summit in Rio de Janeiro and Agenda 21, which were reaffirmed at the 2002 World Summit on Sustainable Development in Johannesburg, South Africa. Over this period, there has been no shortage of normative and political agreements, high-level pronouncements, and public commitments to reduce environmental degradation (table 3.1).

Of course important progress has been made. For example, the Montreal Protocol has successfully curbed emissions of ozone-depleting substances, many countries have experienced substantial improvement in air and water quality, and large shares of land ecosystems have been placed under protection. Still, the overall picture remains one of enormous concern. Regardless of which indicator one picks for measuring environmental sustainability, most regions are not on track to halt environmental degradation, and some have witnessed dramatic environmental degradation.

Why has the world not progressed farther toward achieving environmental sustainability? Why do most reports on the environment start, like this one, with a gloomy assessment of its current state? Finding compelling answers to these questions is critical for developing a framework of action that can help countries and the world move toward Millennium Development Goal 7.

The direct and indirect drivers of environmental degradation identified in chapter 2 continue unabated, even in the face of mounting evidence of their negative effects on human health and well-being. However, as this task force describes in Part 2, tools and policies exist to attenuate or even mitigate each

Table 3.1
Chronology of
major multilateral
environmental
agreements

Agreement	Year adopted or opened for signature
Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar)	1971
Convention on International Trade in Endangered Species of Wild Fauna and Flora	1973
United Nations Convention on the Law of the Sea (UNCLOS)	1982
The Vienna Convention for the Protection of the Ozone Layer and its Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol)	1985, 1987
Basel Convention on the Control of the Transboundary Movements of Hazardous Wastes and Their Disposal (Basel Convention)	1989
Convention on Biological Diversity (CBD) and accompanying Agenda 21, the United Nations Conference on Environment and Development	1992
United Nations Framework Convention on Climate Change (UNFCCC)	1992
United Nations Convention to Combat Desertification (UNCCD)	1994
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention)	1998
Millennium Declaration	2000
International Treaty on Plant Genetic Resources for Food and Agriculture	2001
Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention)	2001
Johannesburg Declaration on Sustainable Development and Plan of Implementation, World Summit on Sustainable Development	2002

driver. Past experience, available science, and promises of improved technologies suggest strongly that environmental damage can be contained without jeopardizing countries' prospects to end poverty. While the reasons for lack of progress differ by country and region, common factors can be identified. In this chapter, the task force focuses on what it considers the most important ones.

Lack of clear operational objectives

As argued in chapter 1, environmental policy is often obscured by a lack of clear operational targets. For example, Poverty Reduction Strategy Papers that mention environmental issues do not tend to set short- and long-term targets (Bojö and others 2004). Thus, environment strategies cannot be monitored; in turn, they become difficult to implement and tend to fall by the wayside in the presence of funding or other constraints.

In cases where targets have been set, such as the Montreal Protocol targets to reduce emissions of ozone-depleting substances, the U.S. clean air and water acts, or European initiatives to curb acid deposition, they have succeeded in focusing the attention of policymakers and galvanizing development of new technologies. For example, several high-income countries have successfully introduced increasingly stringent standards on air quality to reduce emissions

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of sulfur dioxide and nitrous oxides. Often the tightening of standards was announced with long lead times to allow the private sector to adapt by improving technologies to filter air. These changes, in turn, have led to cost savings for private enterprises and the public sector alike.

All too often, however, operational targets are not set since environmentalists fall into the trap of making “better” the enemy of “good”: Scientists and policymakers search for a perfect understanding of the challenge and all ramifications of corrective action instead of implementing strategies based on the best available knowledge; as a result, policy changes and investment in environmental management are impeded. Pragmatic approaches that focus on achievable outcome targets are required, while allowing sufficient room for course corrections, based on the principles of adaptive management, as more information becomes available.

In short, lack of clear objectives renders a goal-oriented approach to environmental policy impossible. A primary challenge is to set clear priorities and objectives at both the national and international levels. National targets should be set at a level that responds to global standards, while being commensurate with existing and potential national capacities—economic, technical, social, and institutional. Once operational targets have been set, many sources of knowledge can be drawn on to guide how the targets are to be achieved.

Insufficient direct investment in environmental management

Addressing the direct drivers of environmental degradation and reversing the loss of environmental resources require direct investments in improved environmental management. Chapter 4 describes some of the most important investments and associated policy changes. Examples include improving soil and water management for agriculture, treating wastewater to reduce water pollution, and developing measures to promote reforestation, restore coral reefs, and reduce air pollution. While such measures are well known, scant public and private resources are invested in most developing countries to improve environmental management.

A key challenge involves limited financial resources. In the cases of most low-income and some middle-income countries, domestic resources may be insufficient to cover the full range of needed investments in social services, infrastructure, and improved environmental management. As a result, poor countries are often forced to develop environmental strategies that cannot be implemented. In such cases, sound financing strategies are required that maximize mobilization of private and public domestic resources and draw on external financing as needed (chapter 6).

A related constraint is the incomplete understanding of specific interventions to improve environmental management, such as measures to combat desertification or halt the degradation of mangroves and coral reefs. In contrast to the public health field, for example, where detailed and tested treatment

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protocols are publicly available for every major disease, the environment field has few comparable inventories of best practices. This results, in part, from the complexity of environmental management, which makes it impossible to apply a one-size-fits-all approach. However, better inventorying of successful measures is needed for developing customized investment programs for improved environmental management at local, national, regional, and global scales (chapter 6).

To this end, international organizations working on environmental issues must shift their focus from normative work toward country-level advice on how to prepare and implement strategies for improved environmental management. Such technical support to countries must include advice on the macro-economic programming of expenditures for environmental management in medium-term expenditure frameworks or other planning frameworks for public investment. Otherwise, it will be difficult to make available the resources required to improve environmental management.

Poor integration into sector policies

Despite the insistence of the 1992 Agenda 21, the 2002 Johannesburg Declaration on Sustainable Development and Plan of Implementation, and most multilateral environmental agreements on the need to integrate the principles of environmental sustainability into sectoral policies, this rarely happens in practice. All too often, national environment strategies—including action plans prepared for implementing major conventions—are developed in isolation from other sectoral strategies that strongly affect environmental sustainability. Lack of political will and difficulty in changing entrenched habits are frequently cited reasons for this quagmire; more proximate causes include:

- Lack of policy space to evaluate tradeoffs between environment outcomes and social or economic objectives.
- Ill-adapted policy formulation and implementation processes.
- Well organized political opposition to change.
- Poor understanding of the social, economic, and health costs of environmental degradation.

While synergies and “win-win” strategies exist in some areas, tradeoffs are common among environmental and social or economic objectives. For example, steps that may appear highly beneficial to a national economy in the short term—increasing fisheries harvests, converting complex forests into mono-specific plantations, or building roads or hydroelectric plants—can have immediate adverse affects downstream or longer-term negative consequences that cannot be easily mitigated. Ironically, these negative effects will, over the long run, damage the very activities they were designed to enhance.

Most countries lack sufficient institutional mechanisms with which to identify and evaluate tradeoffs between development strategies. More often, environmental sustainability is relegated to a sectoral issue assigned to one or

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more line ministries, with few institutional mechanisms for identifying and resolving potential conflicts between environment and other strategies. For example, most countries lack forums where senior policymakers and key ministry representatives can weigh the environmental cost of a new infrastructure project against expected economic gains. Likewise, most development strategies are constructed from sectoral strategies, with poor coordination across sectors. While this approach may be acceptable for health interventions to reduce maternal mortality rates, it is inappropriate for crosscutting environment issues. The implication is that mechanisms for developing national poverty reduction strategies or similar development frameworks must be fundamentally revisited, as proposed in chapter 6. In addition, strategic environmental impact assessments can be an effective tool for resolving such tradeoffs (chapter 5).

Finally, opposition to improved environmental management may be better organized than those who stand to benefit from reduced environmental degradation. For example, well organized factory owners may resist tougher environmental standards that would benefit the rest of the country. Likewise, environmentally damaging subsidies for energy consumption, transport, or water use may be difficult to eliminate in the face of strong organized opposition. Overcoming such well organized opposition ranks among the toughest challenges for environmental policymaking and requires tailored responses. Such responses should build on discussing publicly the country's key environmental, social, and economic objectives; improving access to environmental information; and identifying needs and mechanisms for compensatory transfer payments or services to mitigate adverse environmental effects (see chapter 5).

Ultimately, all stakeholders must recognize that the natural environment is the critical infrastructure upon which human health and economic well-being depend. It is within this context that discussions of tradeoffs—which imply concessions by all sides of an issue—should occur.

Inadequate institutional capacity, misalignment of goals, and poor governance

In most developing countries, environmental ministries and protection agencies are severely understaffed and lack sufficient technical expertise and equipment to conduct their work effectively. They tend to lack access to environment experts who can assist in the design of investment strategies that minimize tradeoffs and exploit opportunities for synergies.

This challenge of insufficient technical expertise extends beyond the inadequate numbers of environment experts employed in national and local governments; it also includes their training, which often lacks the breadth and technical rigor required to implement sound environment strategies. Likewise, insufficient numbers of adequately trained extension workers exist to promote farming practices that minimize environmental damage, sustainable fishing practices, and other techniques that can improve environmental management.

**Countries
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institutional
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Thus, as discussed in chapter 5, countries must invest in institutional capacity building; institutions charged with environmental management must train experts to develop and implement national policies, as well as provide on-the-ground advice to farmers, fishers, foresters, and pastoralists. A particular challenge is strengthening local institutions; the municipal or provincial governments that must implement environmental policies tend to be the most severely underresourced.

Insufficient capacity is compounded by the fact that the institutional goals of many organizations charged with developing environmental policies are poorly aligned with environmental objectives. Institutional goals tend to focus on process targets, such as preparing a new action plan under an international convention or holding a series of workshops, instead of outcome objectives, which require long-term strategies, such as reducing nutrient load flows into a freshwater lake. Despite best efforts many national action plans are not operational and cannot be implemented.

Another closely related issue is poor governance, which manifests in high levels of corruption, poor accountability of policymakers for their decisions, and failure to enforce environmental laws and regulations. Corrupt decisionmakers often condone illegal logging or fishing practices that can have a devastating effect on the local environment. Thus strengthening of institutional capacity must be complemented by improved governance, as outlined in the UN Millennium Project's *Investing in Development* (UN Millennium Project 2005e).

Widespread market failures and distortions

As discussed in chapter 2, market failures can create or exacerbate environmental degradation by misaligning the incentives of individuals or companies with the interests of society at large. This is one reason why private sector expertise and resources are often not marshaled to achieve environmental sustainability. Most of these market failures are well understood and policy responses have been proposed for some. However, available responses can be difficult or even impossible to implement in practice.

To date, no practical approach exists to fully adjust national accounts by accounting for the consumption of nonrenewable natural resources, such as oil or minerals, and the cost of environmental degradation caused (for example, by deforestation or water pollution). Most attempts to implement “green accounting,” such as the UN Integrated System of Environmental and Economic Accounting (United Nations and others 2003) or the World Bank's adjusted net savings¹ (Hamilton and Clemens 1999; World Bank 2004a), focus on small subsections of an economy. That no developed or developing country has implemented comprehensive green accounts is not wholly caused by a lack of will or effort. Instead it reflects deep technical and measurement issues that are unlikely to be fully resolved in the near future. Hence partial solutions are required to improve the accounting of environmental degradation

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in national accounts. A promising example is the physical flow accounts that have been used successfully in several countries in southern Africa (Lange and others 2003).

Both theory and practice show that sound environmental management requires that people living off an ecosystem have a stake in its preservation through some form of property or tenure rights. Successful examples illustrate that, where communities or individuals were granted such rights, substantial environmental benefits were created. However, the list of failed projects is equally long. In many situations, particularly in rural Africa where land tenure systems are especially complex, no tested strategies exist for addressing this market failure. More research is therefore required to better understand these types of market failures and to propose solutions. As discussed below, this problem becomes particularly difficult to resolve in cases where more than one country is involved in managing an environmental resource.

Other market failures that are difficult to resolve result from situations where some form of transfer payment is required between upstream and downstream residents. For example, people living in river floodplains may wish to compensate farmers living upstream for planting trees to reduce the risk of flooding. Economic theory is clear on the need for effective transfers in such situations, but few practical models are available, particularly in low-income countries where limited institutional capacity places an important constraint on countries' ability to implement complex transfer systems. This issue becomes even more complex in the case of transboundary ecosystems or global environmental change, where international transfer payments may be required.

Finally, market-distorting subsidies may be difficult to remove because of well organized opposition, as discussed above, or because they are designed to reduce poverty or serve well identified social objectives. For example, subsidizing motorized transport, electricity consumption, or water for irrigation may be necessary to support the poor. In practice, however, few subsidies are well targeted and end by benefiting many who do not need them, often at the expense of the poor they intended to help. The principal unmet challenge is to design efficient subsidies that are well targeted toward the groups they are meant to support while minimizing their adverse effect on the environment.

Underinvestment in science and technology

Science and technology are critical for achieving environmental sustainability in at least three ways:

- Improving understanding of the environment to inform the design of policies and investments.
- Monitoring the state of the environment and progress toward achieving specific environmental objectives.
- Developing technologies to mitigate environmental degradation by curbing pollution or improving the efficiency of resource use.

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In each of these three dimensions, investments fall far short of what is needed to ensure environmental sustainability.

First, major advances have been made in certain areas to harness the best science for improving understanding of the natural environment and informing the policy process. This has been achieved where there are strong national and international scientific research programs and independent, policy-relevant scientific assessments, coupled with effective outreach and communications strategies. In the areas of climate change and biodiversity, well coordinated international research programs include the International Geosphere Biosphere Program, World Climate Research Program, Diversitas, and International Human Dimensions Program; successful independent, international assessments include the International Ozone Assessments, International Panel on Climate Change, and Millennium Ecosystem Assessment.

These initiatives assess and synthesize existing knowledge that is policy relevant, but do not themselves generate new scientific research. They do, however, identify key knowledge gaps and areas for increased research. Unfortunately, environmental scientists too often focus on fundamental research at the expense of applied work of high relevance to policymakers. This important gap needs to be filled. In addition, most decisionmakers, especially those in developing countries, lack effective access to scientific advice on environmental sustainability that would allow them to make informed decisions. To this end, mechanisms need to be set up to provide timely, high-quality science advice to policymakers, as described in chapter 5. Investments should also be targeted at developing indigenous cadres of scientific researchers in developing countries to build local capacity for research, assessment, advice, and policy implementation.

Second, countries' ability to effectively monitor environmental change at the local, national, and regional levels remains inadequate. This is particularly the case for low-income countries, where hydrological and other monitoring systems have deteriorated over the past decades (UNESCO–WWAP 2003). Existing ground-based monitoring systems must be strengthened to improve scientific understanding of the environment, inform the choice of environmental strategies, and track progress toward achieving the objectives. Information from ground-based monitoring systems should be coupled with that obtained from satellite systems. While better monitoring is critical, incomplete information must not serve as an excuse not to act now by investing in improved environmental management.

Third, investments in environmentally friendly technologies are insufficient. With growing per capita incomes and populations, consumption of environmental resources and services may exceed the carrying capacity of ecosystems. Likewise, pollution levels may rise beyond sustainable levels unless technologies are developed to decouple rising consumption levels from pollution and demand for ecosystem services. A good example of potential benefits from improved technologies is the energy sector. Several options exist

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for minimizing pollution and demand for ecosystem services associated with energy use, such as fuelwood. These include replacing fossil fuels with fuel cells, solar cells, wind power, and geothermal and other energy sources that can dramatically reduce greenhouse gas emissions, air pollution, and the need for fuelwood. Currently, such renewable energy sources are not commercially viable, in most situations, and require ongoing research to improve efficiencies and lower production costs. Despite the enormous benefits that can derive from improved energy technologies, public and private funding for research on renewable energy sources has fallen over the past decade. Other areas where environmentally friendly technologies are not matched by adequate research efforts include tropical agriculture and water management, aquaculture, and low-cost wastewater treatment.

Difficulty of regional and international cooperation

Improved regional and global management of the environment must complement national policies and investments. For example, the Mekong River and Nile Basin Initiatives have successfully improved the joint management of transboundary rivers and watersheds. Another promising example is the Amazon Cooperation Treaty Organization, which aims to develop a joint management strategy for the Amazon Basin among all riparian countries. Other environmental challenges in need of well coordinated regional responses are desertification, management of coastal and freshwater fisheries, and pollution of water and air. For example, halting eutrophication of Africa's Lake Victoria will only be possible if all shoreline countries—Kenya, Tanzania, and Uganda—cooperate to reduce nutrient loads in the lake.

Existing regional organizations often lack the mandate or funding to address the complex challenge of improving regional cooperation. A key challenge is overcoming the high costs of coordinating the interests of several countries. A closely related issue is the difficulty of allocating benefits and costs of regional environmental management to individual countries. For example, mechanisms must be found to compensate one country for investments in the improved management of transboundary watersheds that benefit all riparian countries. Similar arrangements should be made for countries that reduce sulfur dioxide emissions and thus acid deposition outside their national boundaries. Such transfer mechanisms are notoriously difficult to set up and require sophisticated institutional mechanisms that are largely unavailable in developing regions.

The same challenges are even more pronounced at the level of international cooperation. With few exceptions, such as the successful implementation of the Montreal Protocol, the international community's track record in implementing international environment agreements is poor. Most conventions, especially those that entered into force during the 1990s, are framework conventions that establish agreed-on goals and general priorities, while leaving details of implementation to each national government's party to a convention. Such agreements

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are not legally binding on the countries that sign, which allows for considerable diversity between the needs and capacities of various countries; the drawback, however, is that means of enforcement are weak to nonexistent.

A key challenge is climate change. This issue can be addressed only through a concerted international response that, building on the entry into force of the Kyoto Protocol, engages the United States and the major developing countries, recognizing the concept of differentiated responsibilities.

A second challenge is the multilateral trade system, which currently includes no provisions to stem trade in natural products, such as timber, that are harvested in unsustainable ways. As a result, certain countries export environmental degradation. China, for example, has recently protected many of its forests, but now imports timber from countries like Myanmar and Indonesia, where most timber is harvested with scant regard for minimum environmental standards. Given the tremendous economic gains that can be made from illegal and unsustainable logging, it becomes extremely difficult for governments to strengthen environmental management without supporting standards set through the international trade system.

A third challenge is to stop the overexploitation of international fisheries resulting from the lack of an international management system. Effectively, the international seas are a “free for all” resource where individual countries compete to harvest key fisheries and lack any incentives to protect the common resource. While no easy solutions exist, this task force discusses in chapter 6 what steps could be taken on a regional level.

Limited public awareness

Environmental sustainability has remained elusive because of limited public awareness. While awareness of the natural environment’s importance to human health and well-being and of the consequences of human alteration has grown, it is insufficient to build a broad-based constituency for environmental sustainability. Few understand that their governments not only directly subsidize and thus overcapitalize such sectors as farming, fisheries, and forestry, but indirectly subsidize these same industries by underwriting the remediation of the resulting environmental damage with tax revenues.

A fully informed citizenry will insist on better performance by the public and private sectors that serve them; this insistence will promote more rational, equitable, and environmentally sustainable practices. A major effort must be made to educate the public about the direct connections between the health of their local natural environment and the long-term health and economic well-being of themselves, their families, and fellow citizens. This effort must be country specific and nationally generated. In sum, an informed citizenry may be one of the most effective ways to move expeditiously toward environmental sustainability; while it is an insufficient condition for achieving environmental sustainability, without it, there is little hope that significant change will occur.