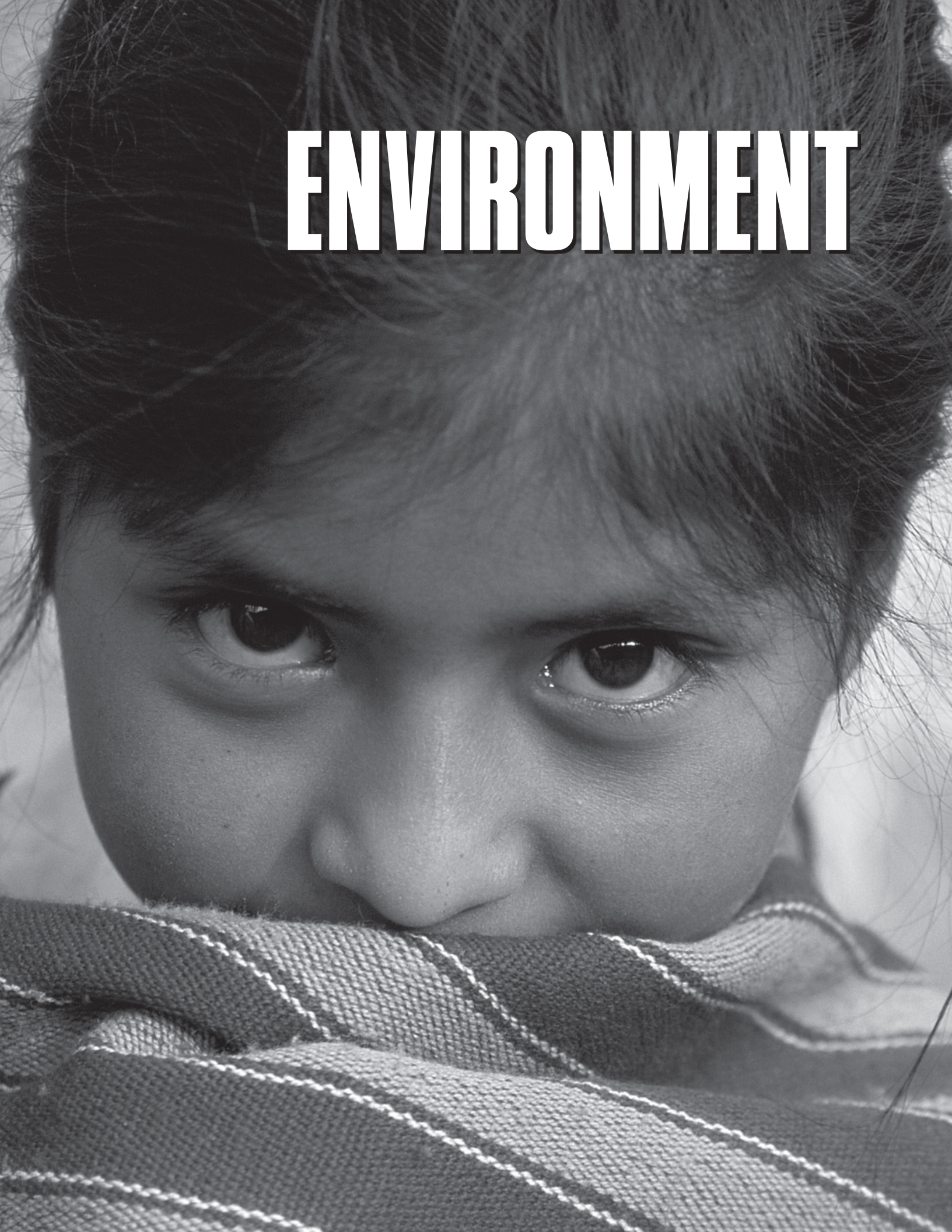


ENVIRONMENT



Environmental sustainability

The United Nations Conference on the Human Environment, held in Stockholm in 1972, drew worldwide attention to the growing impact of human activity on the environment and to the need for sustainable management of environmental resources. Twenty years later the United Nations Conference on Environment and Development in Rio de Janeiro adopted a comprehensive plan of action for a sustainable future. That plan later became part of the Millennium Declaration, with some of the more important targets included in Millennium Development Goal 7: ensuring environmental sustainability.

Understanding climate change is a central issue for environmental sustainability and for development policy. Public policy should help people cope with new or worsened risks, facilitate investments in clean energy technologies, and adapt land and water management to better protect a threatened natural environment while feeding an expanding and more prosperous population.

The World Bank Group plays a key role in financing climate change adaptation and mitigation. Since 1999 it has led in forming carbon markets, which are now directing funds toward clean low-carbon development. At the UN Climate Change Conference in Copenhagen in 2009, it launched the Carbon Partnership Facility, the latest addition in a family of carbon funds and facilities. The facility assists developing countries in pursuing low-carbon growth and in accelerating reductions of greenhouse gas emissions; it uses carbon finance innovatively to leverage capital for both public and private investment in clean technologies. At the UN Framework Convention on Climate Change conference in Cancun in 2010, the World Bank joined global leaders and policymakers in the Roadmap for Action: Agriculture, Food Security, and Climate Change, which outlines concrete actions linking agricultural investments and policies with the transition to climate-smart growth. It highlights a “triple-win” approach: increasing farm productivity and incomes, making agriculture more resilient to climate change, and making agriculture part of the solution to climate change by sequestering more carbon in the soil and biomass.

Environmental indicators

Monitoring progress toward the environment targets of the Millennium Development Goals and measuring the complexity of environmental phenomena require new measurement frameworks and new data. This year’s *Environment* section of *World Development Indicators* includes a new table on natural resource rents that measures human dependence on environmental assets. And in recognition of the mainstreaming of green accounting, the data on adjusted net savings—gross savings adjusted for capital depreciation, resource depletion, pollution damage, and human capital investment—have been moved to the *Economy* section (table 4.11), joining a new table showing corresponding adjustments to national income (table 4.10). Together these tables provide a clearer picture of the impact of the environment on the long-term sustainability of economic growth.

Other indicators in this section describe land use, agriculture and food production, forests and biodiversity, water resources, energy use and efficiency, urbanization, environmental impacts, government commitments, and threatened species. Where possible, the indicators come from international sources to facilitate cross-country comparison. Important to keep in mind is that country coverage may be uneven, ecosystems span national boundaries, and natural resource use may differ locally, regionally, and globally. For example, greenhouse gas emissions and climate change may be measured globally, but their effects are also manifested locally, shaping people’s lives and opportunities.





Measuring dependence on environmental assets

Accounting for the contribution of natural resources to economic output is important in building an analytical framework for sustainable development. The extraction or harvesting of natural resources can produce substantial rents—revenues above the cost of extracting them—which are calculated as the difference between the price of a commodity and the average cost of producing it. This is done by estimating the world price of units of specific commodities and subtracting estimates of the average unit costs of extraction or harvesting. These unit rents are then multiplied by the physical quantities countries extract or harvest to determine the rents for each commodity, as a share of gross national income (GNI).

Table 3.16 presents data on rents from oil, gas, coal, and other mineral production and from forests as a share of GNI. In some countries those rents, especially from fossil fuels

and minerals, account for 30–50 percent of GNI (figure 3a)—almost 70 percent in Iraq. Rents from nonrenewable resources—fossil fuels and minerals—as well as rents from overharvesting of forests indicate the liquidation of a country's capital stock. When countries use such rents to support current consumption rather than to invest in new capital to replace what is being used up, they are, in effect, borrowing against their future.

For resource-rich countries—where resource rents are at least 5 percent of GNI—transforming nonrenewable natural capital into other forms of wealth is a major development challenge. Figure 3b plots adjusted net savings—net national savings plus education expenditure, minus energy depletion, mineral depletion, net forest depletion, and carbon dioxide and particulate emissions damage—against energy and mineral rents for resource-rich countries. Countries with negative adjusted net savings, such as Angola and Republic of Congo, are depleting natural capital without replacing it and becoming poorer over time. Countries with positive adjusted net savings, such as Botswana and China, are adding to wealth and well-being and reducing natural resource depletion by investing in other types of capital. (See *About the data* for tables 4.10 and 4.11.)

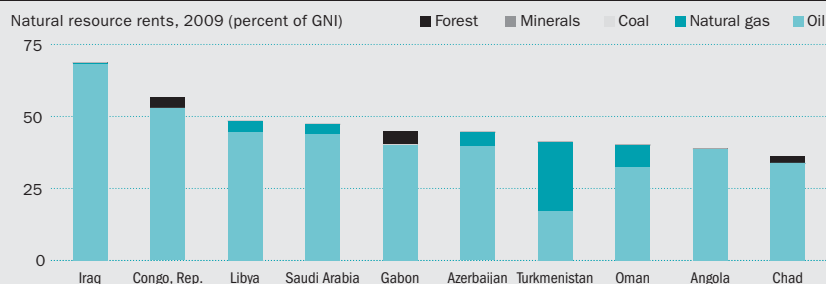
Mainstreaming environmental and wealth accounting in country statistical systems

There has been considerable effort over the past 20 years to develop statistical methods for environmental accounting (a broad framework that includes natural capital accounting) under the aegis of the United Nations Statistical Commission. The commission established the London Group on Environmental Accounting and later a high-level body, the UN Committee of Experts on Environmental and Economic Accounting, to develop methodological guidelines. In 2003 the United Nations and other international organizations produced the *Handbook of National Accounting: Integrated Environmental and Economic Accounting* (UN and others 2003). It is currently under revision and will become part of the statistical standard, like the System of National Accounts, which establishes methodology for national accounts.

Other institutions and individual scholars have also done work on wealth accounting over

The 10 countries with the highest natural resource rents are primarily oil and gas producers

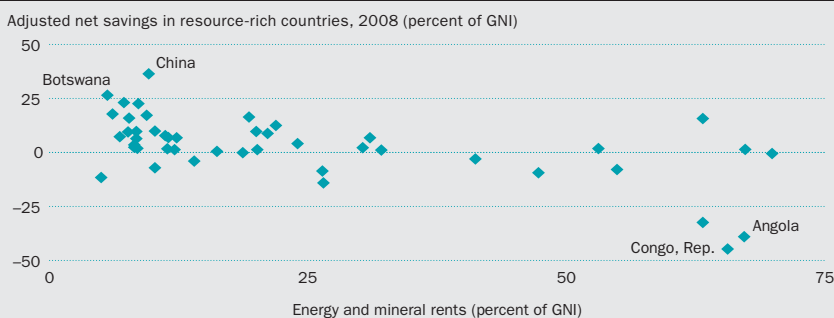
3a



Source: Table 3.16.

Countries with negative adjusted net savings are depleting natural capital without replacing it and are becoming poorer

3b



Note: The underlying data were produced as part of a long-term World Bank project on measuring sustainable development. Estimates of natural resource rents are used in calculating comprehensive wealth and adjusted net savings, which are now in tables 4.10 and 4.11. For further discussion of wealth accounting, see *The Changing Wealth of Nations* (World Bank 2011).

Source: World Development Indicators data files.

the past 20 years. Official statistical offices in more than 30 countries have institutionalized wealth accounting, and 16 of them regularly compile at least one type of natural resource asset account. The majority of countries focus on mineral and energy assets, but some, notably Australia and Norway, construct more comprehensive accounts for natural capital.

National statistical offices, the academic community, and nongovernmental organizations have produced empirical work on natural capital accounting nationally, regionally, and locally. Together, these studies have deepened our knowledge of wealth accounting, leading to better understanding of the prospects for growth

and poverty reduction, especially in resource-rich countries.

Stiglitz, Sen, and Fitoussi (2009) offer further support for the comprehensive wealth approach to sustainable development. They propose ways to modify and extend conventional national accounts to provide a more accurate and useful guide for policy. An important part of the proposed changes, to better reflect the sustainability of economies, is comprehensive wealth. They recommend compiling accounts for all assets (natural, human-made, and human capital) and changes in those assets, which correspond to the components of adjusted net savings.