Natural Resource Management in Bolivia

Bolivia’s capacity to attain its development goals depends heavily on how well its natural resources are managed. Some natural resources—tropical forests and biodiversity—seem to be abundant. But recent trends in resource use call for concern. To avoid reaching unacceptable levels of resource depletion, a concerted effort will be needed to design and implement effective policies and institutional reforms. The government is now taking important steps in this direction.

A new OED study analyzes the projects, policies, and institutional reforms that have affected the management of Bolivia’s natural resources over 30 years.* The study is part of a larger program of OED work on renewable resource management issues (see also Precis No. 24, Natural Resource Management in Nepal). It urges a reassessment of the concepts and strategies underlying sectoral and macroeconomic decisionmaking in Bolivia, including assumptions about the sources of economic growth and areas of comparative advantage.

In Bolivia, the rate of natural resource use is relatively high, and the links are strong between poverty, the nature of economic incentives, institutional weaknesses in government, and the depletion of land, water, and forests. Bolivia is typical of the world’s poorest countries, where the management of resources essential to sustain economic development has suffered serious neglect. And it offers evidence of the challenges of frontier development where virgin land may be drawn increasingly into unstable use.

Rural population growth has been stable since 1950 at 1.25 percent a year, but urban population grew at 4.45 percent in 1976-88. Rapid urbanization has hastened the contamination of land and water and diverted public investment away from efforts to improve rural resource management through research, extension, and education. (See box.)

Resource management issues

Sociopolitical changes: Rapid and complex social changes since the agrarian revolution of 1952 have strongly affected how natural resources are appropriated and used. Long periods of social unrest and economic instability, differences in culture and ecology, and in development goals across regions, have all influenced the allocation of property and user rights, formulation of economic policies, and distribution of social and economic benefits. Economic and social policies have often taken a short-term approach to problems, rather than seeking lasting solutions.

Bipolar approach to development: Bolivia’s Altiplano has high population density, a limited resource base, and extensive poverty, while the Lowlands, with low population density, seem to have abundant resources and almost unlimited carrying capacity. Especially until the mid-1980s, Bolivia based its development strategy on the assumption that the two regions should be more evenly populated. It is now clear, however, that the government must strive for sustainable development within each region. It is not clear whether the geographic, demographic, and resource imbalances between the two regions ought to be corrected or indeed—given the mixed success of projects to colonize the Lowlands—how much they can be influenced by economic and social policies. Even if policies could have an effect, it is not clear how soon Bolivia should begin the sustainable economic development of the resources that remain.

Both the Altiplano and the Lowlands face a number of similar structural constraints that need urgent attention. While policies and laws have recently been introduced, the legal and regulatory system are not complete enough to implement them. Other problems arise out of the fragility of the environment, the ecological risks associated with developing virgin lands and forests, and poverty. Sustainable development within each region will require strong commitment to developing human capital, knowledge, policies, and institutions to ensure that economic decisions incorporate the full opportunity cost of natural resource use.

*"Natural Resource Management in Bolivia: Thirty Years of Experience," Report No. 11891, April 1993. OED reports are available to Bank Executive Directors and staff from the Internal Documents Unit and from Regional Information Services Centers.
Environmental Challenges

Bolivia faces three major environmental challenges:

- Managing agriculture, grazing lands, and the associated biotic resources in the Altiplano and the valleys. The dominant role of peasant agriculture, the extremely low productivity of the *manifinulata* system, and the acute poverty in the area are major development concerns. Natural causes and overgrazing, overcropping, and inappropriate use of technology are accelerating erosion and reducing fertility. Erosion threatens the stability of the major watersheds, as well as of the electric power system and urban infrastructure they serve.

- Managing a relatively rich natural resource base for development in the Eastern Lowlands. Without proper policies, this frontier region could develop fast but wastefully, with irreversible damage to soil and forests. Wildlands, natural parks, and reserves are threatened by road construction, mining, agriculture, and colonization.

- Managing scarce water resources, particularly in the arid and semi-arid regions of the Altiplano and valleys, where there is intense competition for water for agriculture, mining, and human consumption. Mining operations and coca producers discharge processing effluent and other pollutants into rivers and streams, contaminating irrigation and drinking water. Rivers close to or passing through towns and other settlements generally serve as open sewers. Bolivia has no master plan for water use and conservation. Ministries and departments pay little attention to the effects of water use on the environment. Confusion and considerable damage often result.

Country policy framework: The negative effects of not enforcing conservation regulations—forest management plans, reserves, or wildlife protection—are clearly visible. Though Bolivia’s economic policies have tended to emphasize quick-yielding measures to encourage export-led growth, assuming that economic expansion and stability are preconditions for sustainable development and that natural resources were abundant, today’s policy makers are increasingly aware of the need for better environmental and resource management, and are now beginning to take effective action.

For a country such as Bolivia, heavily dependent on natural resource extraction, macroeconomic and sectoral policies are not neutral with respect to natural resource use. For example, exchange rate depreciation may make forestry more profitable, and this increases the importance of putting in place forestry policies—such as concession arrangements and taxes—that are consistent with the sustainable management of forests.

Recent Bank reports show how the factors that promote responsible management of renewable resources are also those that contribute to economic growth: institutional reforms, training, education, new forestry strategies, and a better regulatory framework.

Exports based on natural resources: Bolivia’s agricultural exports come mainly from undervalued natural resources—from the extensive development of its forests and farms. The record suggests that such exports, often promoted with subsidies, have done little to reduce poverty, while the external costs of the damage to soil, forests, and biological diversity have not been considered in calculating opportunity costs. If Bolivia’s resources were valued at their full opportunity cost, assumptions concerning the country’s comparative advantage might change substantially.

External aid: From 1960-90, external aid to Bolivia generally took little account of how renewable resources could be developed to efficiently supply a sustainable flow of goods and services. Though the donor community probably has long understood the strategic importance of better renewable resource management, the goal was not enunciated till the late 1980s, and the statements did not identify projects or other development instruments to help achieve it.

Structural constraints: Many of Bolivia’s long-lived structural constraints persist. Part of the reason is that Bolivia’s wide disparities in agricultural enterprises and farming systems, human resources, and institutions are mirrored and accentuated at the level of regional development agencies. These agencies, as well as organized groups, have strongly influenced who has access to natural resources and have helped to define how political power has been shared in the last three decades.

Poverty and the environment

The effectiveness of resource management policies depends heavily on poverty, which has been an important cause of harm to the environment in both the Altiplano and the Eastern Lowlands. To reduce poverty in either region will require net economic growth, but poverty issues and the technical constraints on improving living standards differ between the regions.

In the Lowlands, little is known about what types of farming systems (or other nonagricultural uses) would be appropriate and sustainable. The difficulty is to establish sustainable systems that can generate enough income from a family holding to reduce the present incentives to expand to new land.

In the Altiplano, natural resources are severely degraded, population density is high, and landholdings small. Options for intensifying agricultural development and increasing productivity at the margin...
are unclear. Yet as urbanization increases, agricultural productivity will need to be improved—in a fragile ecological system.

Much more needs to be done to facilitate agricultural research, extension, training, and community participation. Agreement is needed about the most important and feasible actions. Reducing poverty in the short or medium term should be a central concern of agricultural sector work.

Knowledge, institutions

To slow down the depletion of forest and soil resources will probably require a change from extensive to intensive production. Efforts to design natural resource management policies and instruments without reference to the need to intensify agriculture have yielded poor results. To intensify farming would require more modern farming systems—preferably environmentally sound ones—including the gradual elimination of slash-and-burn cultivation.

To implement such systems would require large investments in human capital and institutional development. These investments would include farmer training and education, research and extension services, community participation, and the strengthening of national, regional, and local organizations. Changes would also be needed in the incentive structure produced by current economic policies, environmental regulations, and property rights.

Where institutions are weak, the conservation of soil, water, or forests is hampered. The impact of institutional weaknesses showed up during such periods as the implementation of the Ecological Pause (1990), which suspended all processing of new forest concessions, and in the Forestry Law of 1974, which relies on a weak agency to protect forests. Development organizations and their staff need to be trained so that they can respond to the demands imposed by the market system, government, and community organizations. Strong government commitment is essential for success.

In areas where extensive agriculture is practiced, the expansion of agriculture needs to be carefully monitored. Policies for roads and credit in frontier regions need to be implemented in a manner consistent with the land use plans now being developed. Otherwise they could lead to shortlived farming.

The Bank's role

The Bank's association with Bolivia dates from 1955. Though its own lending volume has been relatively small—totaling $734 million—the Bank has used its leverage to help Bolivia obtain or orient other funds.

The Bank has given much attention to Bolivia's development issues. Yet it has not been particularly discerning about the quality of the information it has obtained and used on natural resource management. Because from time to time lending operations in Bolivia were suspended, the Bank has not sufficiently promoted information gathering and analysis that could contribute to better decisions on resource management.

In the Bank's sector work, the recognition and discussion of Bolivia's resource management problems has improved over time. Early reports reflected the belief that better government macroeconomic policies were the necessary spur to economic development. But once these policies were introduced, the sector work reflected the recognition of weaknesses in institutions and in human capital. The most recent reports are more forthright in recommending the use of economic policies to affect resource conservation.

Over the last decade the Bank has pursued a gradual approach in which the development of institutions and a better information base precede the infusion of infrastructure and finan-

Recent Government Actions

Recently the government has made considerable efforts to improve the management of natural resources, especially in the Lowlands. They include:

- Formulating an environmental action plan.
- Enacting an environmental law.
- Creating an environmental ministry (SENMA) and an agency to fund environmental projects (FONAMA).
- Developing an environmental management structure down to the regional level.
- Formulating a land use plan for the Santa Cruz Department.
- Establishing a national system of protected areas.

The government has taken measures to stop the inequitable allocation of land, and is formulating a new agrarian law and a project to support a more effective land administration. Legal work is in progress in the areas of environmental regulations, forestry, and indigenous people.

The road ahead

Reflecting efforts by Bolivians, donors, NGOs, and the academic community, the environmental aspects of development are being more systematically addressed and several projects and policies are being formulated to improve natural resource management. The opportunity now exists to reorient part of the policy dialogue and build safeguards.
Main Findings

- Bolivia’s ability to achieve sustainable development goals will depend strongly on how well natural resource management concerns are integrated into decision making at all levels.

- The country’s development policies still have a bipolar orientation. This approach should be replaced by a goal of sustainable development in both parts of the country.

- The donor community has overestimated the readiness of institutions to implement programs that affect natural resources. Not enough attention has been paid to developing institutions and human capital. Such development would make investment more productive in the medium term and provide a sustainable basis for resource management in the long term.

- The Bank’s instruments of intervention, including investment projects, have proved much weaker than expected. An in-depth study is needed on the effectiveness of economic instruments and alternative environmental interventions.

- If natural resource-based programs are to succeed in the future, policy, institutional, and other reforms affecting natural resource management should be designed and implemented.

- Decisions about natural resource management have been made without enough information; the Bank should support the development of information-gathering systems in Bolivia.

Lowlands: The traditional view that the Lowlands have unlimited “carrying capacity” must be questioned:

- The pace of exploitation of these resources seems to have accelerated.
- Too little knowledge is available to judge the sustainability of economic activities in the Lowlands.
- The potential public benefits of Bolivia’s forests, wildlife, and biodiversity have begun to be clearly recognized by policy makers in Bolivia and outside.
- Current policies and institutions (especially property rights) do not assure that the pace of exploitation is consistent with a proper valuation of opportunity costs.

Macroeconomic policies: The government and the Bank need to be aware of how proposed macroeconomic policies will affect the incentives for and pattern of use of natural resources, so that necessary corrective actions can be taken. These effects need to be taken into account in carrying out public expenditure reviews, investment reviews, and designing adjustment operations. More research is needed on how macroeconomic policy affects natural resource allocation and use. The results may show that traditional notions about the sources of growth and comparative advantage need to be revised.

Realistic pricing: Decision makers in Bolivia should be encouraged to set prices and incentive policies that reflect the full opportunity cost of the natural resources that are incorporated into production, consumption, and trade. This is especially true of land, water, and forests. For some time, these natural resources have been under-valued, leading to extensive land use and relatively rapid opening up of the frontier. There is no consensus on how fast natural capital ought to be depleted, but this issue deserves to be analyzed. A comparative advantage study would be needed to assess the likely effects on Bolivia’s exports of valuing resources at their full opportunity costs. Bolivia should continue to liberalize its trade regime, but only if liberalization is supported by an effort to correct the domestic price distortions and externalities associated with its renewable resources.

- Technical assistance: The Bank should consolidate its technical assistance to Bolivia and intensify its efforts in information gathering, studies, and resource assessments. Major institutional changes are underway in Bolivia, forcing regional and local organizations to redefine their roles and objectives. This is the time for the Bank to support training and education, so that these organizations evolve in a way that is conducive to sustainable development.
- Institutional development: For the long term, decision makers in Bolivia should seriously consider giving higher priority to the development of institutions and human capital.