World Bank Approaches to the Environment in Brazil

A recent OED study* examines how the Bank has dealt with environmental concerns in several large projects in Brazil. It looks at migration, human settlement, productive activities, and their effects on natural resource use over time.

It finds that the Bank approached these projects with a concern for the environment, making pioneering efforts to broaden its traditional approach to project development. But in retrospect, many of the decisions made at preparation and appraisal took too little account of the social and physical environment. This was partly because the Bank lacked enough knowledge about the socioeconomic context into which it was lending, and partly because its expertise in environmental matters was still very limited. In the past fifteen years, with the growth of environmental awareness and expertise, environmental concerns have begun to be much better integrated into economic development initiatives. Nonetheless, the experience reviewed offers lessons relevant to current practice in Bank operations generally.

Case studies

The projects studied were approved in 1974-87 and most were completed in 1983-88. They involved Bank financing of some $1.15 billion. São Paulo: pollution control

São Paulo state produces about half of Brazil's industrial output and has a per capita income twice the national average. Rapid urban industrial growth, largely unregulated and unsupported by adequate sanitation services, explains much of the deterioration in air and water that has occurred over the past several decades. Two Bank-financed urban water supply and sewerage projects of the 1970s had environmental benefit among their goals but execution delays, shortfalls in counterpart funding, political factors, and rapidly growing population limited their achievements. Two industrial pollution control operations (1980 and 1987) fared better. They combined a credit line for industrial pollution control equipment and treatment facilities with technical assistance to the state environmental agency.

Experience with these projects emphasizes that, to be cost-effective, urban environmental management needs to be planned in a comprehensive way, encompassing national and local policy measures to affect private incentives, regulations, public investments, and institutional development efforts.

São Francisco Valley: power, resettlement, irrigation

Hydropower development at Sobradinho, associated irrigation facilities on the lower São Francisco polders, and the Itaparica scheme profoundly affected the São Francisco valley in the impoverished Northeast, both through the benefits of electrification and irrigation and by displacing many rural people.

The Sobradinho regulating dam (approved 1974), displaced some 70,000 people. Though urban resettlement at Sobradinho was fairly successful, rural resettlement was not. Most of the people who were expected to move to an official colonization scheme upstream chose to stay near the reservoir, but had inadequate social and production support. Villages established near the reservoir did not prosper; often farmers lacked the credit and support services they needed.

Regulation of the São Francisco river dramatically increased the minimum flow in the lower valley. The Lower São Francisco Polders and Second Irrigation Projects (1975, 1979) were "emergency" operations to protect the floodplain and establish...
Irrigated polders near the river mouth. They provided poor farmers with tenure to land, farm credit, and technology, reportedly more than tripling the incomes of some 20,000 people. But some 50,000 people, mainly itinerant sharecroppers, were displaced in the lower valley during the later 1970s. Unlike at Sobradinho, no wider resettlement strategy was devised.

At Itaparica (1987), dam and reservoir construction (not financed by the Bank) were accompanied by a comprehensive Bank-funded resettlement program. This program was guided by the Bank's policy on involuntary resettlement, adopted in 1980 largely in response to the experience at Sobradinho, and further elaborated in 1986. The final cost of resettlement at Itaparica will probably exceed $60,000 per family. Although some 40,000 people have been relocated, they have had to await the slow completion of irrigation facilities and associated services before they can farm. Prolonged idleness, few job opportunities, and occasional shortcomings in social services have contributed to uncertainty and frustration.

**Eastern Amazonia: iron mining, associated infrastructure**

The Carajás Iron Ore Project and the POLONOROESTE program were key elements in Brazil's ambitious efforts to integrate the Amazon region into its rapidly growing economy. In the 1960s and 1970s, highways were built and settlement programs drawn up; growth-pole strategies and fiscal incentives were designed to attract private investment. Big hydroelectric and industrial projects were undertaken in the eastern part of the region. Large numbers of small farmers and rural workers were being displaced from south-central Brazil by agricultural modernization and land concentration and from the Northeast by population pressure, recurrent droughts, and poverty. Their need to find gainful work added impetus to directed settlement programs in Amazonia.

The Carajás Iron Ore Project (1982) supported major investments in transport infrastructure and mining, and smaller components for urban development and environmental and Amerindian protection, along a 900 km corridor in eastern Amazonia. The investments yielded significant economic benefits, yet the Carajás area has seen some of the worst environmental degradation in Amazonia. Iron mining development attracted construction workers and other settlers to the region, many of whom have stayed to pursue prospecting, small-scale farming, and urban jobs. The new roads gave access to remote parts of the region. Private land speculators moved in along the roads and railway. As well as providing the lumber needed locally, some native timber is burnt to produce charcoal for pig iron smelters. Much of the area cleared is converted to pasture. But—usually within a decade after first clearing—weeds and secondary growth that are difficult to control encourage people to abandon the land. This encourages further land clearing.

When the Bank loan was approved, these processes were already underway in the region. CVRD (Brazil's largest state-owned mining company) was already pressing ahead with construction, and most design decisions were already being implemented. The Amerindian Special Project introduced at the Bank's insistence improved health care and land demarcation for indigenous people. The project's environmental protection component—mostly to contain soil erosion along the railway and to provide drainage and effluent control at the mine and port sites—was successful. But the broader environmental consequences of the iron ore operation, when combined with other development tendencies affecting its area of influence, were not adequately foreseen. Outside the areas under the company's jurisdiction, environmental protection measures were almost entirely lacking. Project loan covenants were not specific on the subject, making it difficult to know what environmental precautions were required or what the Bank should do to monitor their implementation. Though CVRD continues to take actions on behalf of indigenous peoples using its own resources, the continuing expansion of rural settlement puts the long-term sustainability of efforts to protect Amerindians in question.

**Western Amazonia: highway and rural development**

In 1981, the Government launched the Northwest Region Integrated Development Program, or POLONOROESTE, in the agricultural frontier areas of Rondonia and western Mato Grosso, at an estimated cost of $1.6 billion. Its goal was to provide for sustainable settlements by expanding infrastructure and supporting agriculture and social services. The Bank's six loans supported pavement of the federal highway between Cuiabá and Porto Velho, extension of feeder road networks in both states, consolidation of existing settlement schemes and support for the establishment of new ones, improvement of rural social services, and measures to protect the natural environment and indigenous peoples. As in the Carajás project, the Government financed a Special Amerindian Project within a framework agreed with the Bank.

The start of POLONOROESTE coincided with an economic crisis. Large numbers of urban dwellers, adding to the continuing flow of rural migrants, headed for the northwest in the early and mid-1980s. Much of the environmental degradation that has been associated with POLONOROESTE reflects the public sector's inability to control the rate of rural and urban settlement and thus to keep incoming migrants from attempting to exploit areas that the program was meant to protect. POLONOROESTE's design incorporated what were—at the time and in the Amazonian frontier context—progressive environmental and social concerns, and the Bank tried to build safeguards into the program. But preparation and appraisal did not sufficiently consider what would happen if rates of
migration significantly exceeded expectations.

Implementation conditions differed from those assumed at appraisal: many more migrants than projected; inadequate and late disbursements of counterpart funds, because of Brazil's difficult fiscal situation; shortages of the investment credit needed to install perennial crops; overly centralized project management; and ineffective integration of participating agencies. Roads were built successfully and on time. But agricultural support services, community facilities, and environmental and Amerindian protection measures lagged behind. The Bank informally suspended disbursements in March 1985. Funding was resumed in August 1985 after federal authorities moved to protect several vulnerable Amerindian areas and agreement was reached on an agenda for redirecting the program.

As originally designed POLONOROESTE contained ambitious forestry, environmental, and ecological research components, but implementation in the early years was frustrated by inadequate technical knowledge, an unsupportive policy environment, weak institutional capacity, and shortages of counterpart funding. The 1985 reorientation contributed to important changes: establishment of state environmental protection agencies, supported with program resources; higher taxes on forest exploitation; bigger fines on illegal exploitation; establishment of a Forestry Military Police, and of a State Forest Institute to provide forest extension services.

The Bank's approach

The Bank approached the projects studied with a concern for the environment. It made pioneering efforts to broaden its traditional approach to project development, including the pre-appraisal environmental "reconnaissance" of Sobradinho, the multi-disciplinary Northwest region survey mission, participation by anthropologists and ecologists in the appraisal and supervision of the Amerindian and environmental protection components of Carajás and POLONOROESTE, and the preparation and supervision of the Itaparica Resettlement Project.

But in retrospect many of the decisions made at the preparation and appraisal stages of the projects paid too little heed to the social and physical environment. Project design, appraisal, and the early stages of execution did not take sufficient account of the likely environmental effects of the investments. Partly this was because the Bank lacked enough knowledge about the socioeconomic context into which it was lending—a gap that could have been filled by more thorough and more broadly gauged economic and sector work. Partly, though, it was because the Bank's expertise in environmental matters was still very limited, and because ex ante environmental assessments were not sufficiently comprehensive. Processing of the operations did not adequately address inter-sectoral and interregional linkages or the effects that policy and economic incentives would have on natural resource use and environmental quality.

To its credit, in the case of POLONOROESTE the Bank suspended disbursements and called for reorientation when it saw that the program was going awry. In several of the projects reviewed, the adaptations attempted to incorporate lessons learned and new Bank directives on how to deal with environmental issues.

Recommendations

These projects provided key inputs into the Bank's current operational guidelines for assessing environmental and sociocultural problems and impacts. Many of the lessons they yielded have already been absorbed by the Bank and by Brazilian government agencies. Areas remain, however, where improvement is needed, or where these lessons of experience are of value to other countries.

Environmental protection

Institutional and technical capability: The Bank should continue to support the strengthening of environmental agencies in Brazil and elsewhere.

Public awareness and community participation: To help generate the political commitment and accountability needed to attain environmental goals, the Bank should continue to support environmental education programs and to encourage community associations and other NGOs to participate in environmental monitoring. Priority attention should be given to low-income, heavily populated, and industrialized areas.

Regulation and economic incentives: Where the benefits of such measures clearly outweigh the costs, environmental protection requires a mix of regulations and economic instruments including taxes, fees, and other incentives. Adequate enforcement of environmental regulations can be very costly. An approach now being tested by the Bank and the Brazilian Government combines regulations with (1) a technical planning instrument (agroecological zoning) to direct public and private investments and (2) economic incentives and sanctions designed to encourage more sustainable resource use. This effort should be carefully monitored.

Environmental assessment and management

Need for thorough, broadly-based, initial assessments: Developing an adequate understanding of the specific settings involved is vital. Such assessments, and action plans deriving from them, need to embrace a broad enough area of influence. Proposed investments, particularly in ecologically sensitive areas, need to be assessed in the light of local carrying capacities, if development is to be sustainable.

A key dimension of environmental management concerns the relationship between local development and that occurring elsewhere in the country.
Establishing an effective and environmentally-informed national policy framework that considers spatial and intersectoral linkages will not be easy. But because of its potential for improving environmental management over the long run, this should be strongly encouraged.

Any public policy that directly or indirectly affects population distribution, settlement patterns, productive activities, and, thus, natural resource use will affect the environment. Potential environmental and social consequences of macroeconomic and sectoral policies should not be ignored, and mitigatory measures should be taken when needed. Environmental implications of policies for the agricultural, industrial, power, and transport sectors should receive special attention.

Timing, sequencing: The Bank should become involved in project preparation early enough to ensure that designs adequately take account of environmental and social costs. Experience also emphasizes the importance of proper sequencing. In POLONOROESTE, for example, roads were built on time but services for the resulting influx of migrants were much slower to develop. Implementation schedules for physical infrastructure components should take account of the time needed to prepare social or institutional development components adequately.

Bank activities and procedures

The Bank can influence natural resource management and environmental protection through its ongoing policy dialogue and economic and sector work. Though considerable progress has been made, much remains to be done to better integrate environmental concerns into ESW.

Project identification, preparation, and appraisal: The Bank should seek a thorough understanding of the ecological potentials and constraints and the underlying socioeconomic, political, and institutional processes that affect development in areas where it proposes to support investments. Particular attention should be given to environmental impacts that may be irreversible and to areas with large concentrations of population.

Before lending, the Bank should realistically assess the borrower’s commitment and capacity to achieve project environmental goals. It should undertake extensive environmental and social risk analysis, evaluate the borrower’s institutional capabilities and political will, include all necessary institutional strengthening measures in project design, and promote better understanding of the environmental and social implications of the borrower’s policy and investment decisions. All relevant national and local demographic, economic, and governance factors should be clearly taken into account.

Covenants, with provisions that are clear enough to be monitored, should spell out the nature and expected timing of the environmental precautions and mitigatory measures to be taken in connection with any new operation; they should be firmly enforced.

Supervision, monitoring and evaluation: In several cases reviewed, Bank supervision made a vital contribution to a positive outcome. In others, it was insufficient, often because of the Bank’s initial lack of appreciation of the complexities and dynamics of the project areas.

Projects likely to have significant effects on the environment need especially thorough supervision. In countries where the environmental portfolio is large and/or rapidly growing, or where current operations are likely to have significant human or physical environmental consequences, the Bank should consider placing one or more representatives in the field to intensify supervision and improve communication with borrowers on such issues.

More generally, the Bank should:

• arrange for independent, multidisciplinary, monitoring and ongoing evaluation, including mid-term reviews, of environmental and social performance and effects;

• involve responsible local, national, and/or international NGOs in such activities wherever feasible; and,

• improve completion reporting on project environmental performance and impacts, and expand ex-post evaluation on these matters.

Sustainability: Experience emphasizes the need for measures to guarantee protection of the natural environment and vulnerable social groups—especially indigenous populations and people to be involuntarily resettled—after Bank financing has concluded. The Bank should help define these measures and agree upon them with the borrower.