

Finding a Balance

The Environment in a Developing World

Twenty-five years ago, the environment was not an issue on the international agenda, and there were only a few environmental organizations in the United States. Today, the situation is different. Both the U.S. government and private groups are increasingly active in natural resource matters and the state of the environment is a global concern.

The integration of environment into the development process, however, began in earnest only in the last decade when international attention focused on the relationship between economic growth and sustained natural resource management at the U.N. Conference on the Human Environment at Stockholm in 1972.

An AID Priority

AID was one of the first donor agencies to respond to environmental concerns four years later when it adopted environmental procedures that significantly changed its project design and approval process. Environmental analysis became a requirement for all overseas development projects, and careful procedures for pesticide-use in development activities were outlined in accordance with the 1970 National Environmental Policy Act (NEPA).

Further steps were taken toward integrating environmental concerns into development when Congress amended the Foreign Assistance Act in 1977 to add "environment and natural resources" to AID's mandate. The Agency subsequently was required to prepare environmental profiles of recipient nations and to address the problems of deforestation and soil erosion.

"As a result of these measures and the initiation of projects that addressed environmental and natural resource issues, AID emerged as a leader in integrating environmental planning and management into development,"



In its efforts to develop the economy of the Third World, AID emphasizes careful stewardship of natural resources.

says Norman Cohen, environmental affairs coordinator for the Agency.

This leadership has been evident in the Agency's innovative approaches to conservation, from the development of country environmental profiles to the preparation of a U.S. Strategy for Biological Diversity.

A Plan for the Future

U.S.-supported country environment or natural resources profiles, which define the current status of renewable natural resources, have been prepared for 23 developing nations and are a model for other donor agencies.

Their influence is apparent. For example, the Honduran profile, published in 1982, was used as the basis for an extensive natural resource management project instrumental in halting soil erosion in a major watershed area. The preparation of a Dominican Republic profile led to the orientation of a major part of the AID program in that country toward natural resource activities.

"We work closely with experts from the particular country in the process," says Molly Kux, environmental coordinator in AID's Bureau for Science

and Technology. "In Thailand, for example, the Thai Development Research Institute took the leading role in analyzing the nation's environmental situation," she notes. "The Natural Resources profile was used in the recently approved five-year development plan—the first time this type of information has been used in national planning."

As a logical follow-on to the environmental profiles, U.S. support provided for the preparation of several national conservation strategies that integrate conservation into overall economic development goals. The U.S. foreign aid program was the major funder for a Nepalese conservation strategy and has provided assistance to prepare strategies for Sri Lanka, the Philippines and Zimbabwe.

For conservation efforts to be effective, an institutional base for natural resource management needs to be established in a country. "We have been working with indigenous private conservation organizations and in the environmental education field for this purpose," says Kux.

For example, a joint effort with the World Wildlife Fund-U.S. is bringing together Panamanian environmental organizations to build a solid non-governmental base for conservation.

Fundacion Natura, an AID-supported Ecuadoran environmental group, has been among the most successful in environmental education.

"U.S. assistance to Fundacion Natura began in 1980," points out Jim Hester, chief environmental officer in AID's Bureau for Latin America and the Caribbean. "It has led to the publication of a series of posters for schools, environmental comics for children, regular television spots and books on the endangered species of Ecuador and the birds of the Quito Valley. Several very successful radio shows also have been created.

"The organization uses many innovative approaches to environmental broadcasting," says Hester. "One popular program has a man driving around Ecuador talking about the natural environment that he sees. Another uses Halley's Comet as a vehicle to present changes that have occurred in the Earth's environment during the intervals between the comet's appearance."

Fundacion Natura also has prepared a teacher's manual for grades one through six, integrating environment into the country's science curriculum.

Tropical Rescue

AID has taken major steps recently to address what is perhaps the most pressing environmental problem of this century—the destruction of tropical moist forests, which results in the loss of unique and valuable species of flora and fauna.

Tropical forests cover only about 7% of the earth's surface, yet they contain half of all species of plants and animals—many of which provide genetic material for crop improvement, pest resistance and materials used for medicinal and industrial purposes.

At current rates of deforestation, each year some 80,000 square kilometers of forest are converted to agriculture or fall victim to excessive burning, grazing, fuelwood gathering and industrial exploitation. This means that a million species—10-20% of the earth's total—could become extinct by the year 2000. Many will disappear without ever having been discovered.

AID first began to address this prob-



lem in 1981 when the Agency co-chaired a conference on biological diversity. Two years later Congress required that AID prepare a strategy for helping developing nations conserve their biological resources.

AID then convened a 12-agency task force and consulted with experts from government, industry, academia and environmental and policy groups. The U.S. Strategy on the Conservation of Biological Diversity in Developing Countries was submitted to Congress in February 1985.

Even before the strategy was drafted, a number of AID programs for conservation of biological diversity were already under way.

"The New York Botanical Garden, in conjunction with the Missouri Botanical Garden, for example, is conducting an economic botany project in eastern Ecuador to identify underutilized plants with commercial potential such as the tagua palm nut," notes Hester. The tagua palm nut, a source of manin—a sugar used by the U.S. pharmaceutical industry for biomedical purposes—is experiencing a renaissance as an export commodity.

A similar effort in Peru has resulted in the identification of a vine with seeds that, when dry, burn with a clear blue flame and may have

economic potential as a substitute for kerosene and charcoal. Also in Peru, a new provenance of a tree species previously known only in Brazil was identified. Its bark contains a substance widely regarded as a potentially promising cure for some forms of cancer.

The Challenge in Africa

Environmental degradation, including deforestation, soil erosion and fertility losses as well as desertification, have contributed substantially to increasing sub-Saharan Africa's vulnerability to drought and to undermining its agricultural productivity.

The U. S. interest in combating environmental degradation in Africa dates back to the late 1970s when a number of reforestation programs were launched as a result of the devastating drought that affected the Sahelian region.

In the early stages, however, many efforts were less successful than anticipated. Careful analysis showed that the causes and effects of environmental degradation and desertification had been too loosely and simplistically ascribed to the depletion of fuelwood



reserves. In areas undergoing environmental degradation, many other components of the rural production system often were under stress.

As a result of these findings, AID has sought improvements in integrating agriculture and forestry programs.

At the same time, AID has promoted tree planting. Community-based agroforestry and tree-planting activities are beginning to make modest progress in a number of countries including Niger, Senegal, the Gambia, Rwanda, Burundi, Kenya, Somalia, Sudan and Comoros.

"In Niger, we have made impressive gains in the CARE-AID Majjia Valley Windbreak project," says Tom Catterson, senior forestry advisor in AID's Bureau for Africa. The project began in 1974 in a then wind-eroded valley.

"With the cooperation of the government of Niger, we have successfully established over 500 kilometers of windbreaks using neem trees from India. This has resulted in a 20% increase in millet yields," Catterson points out. "Not only are farmers in adjacent areas now asking for windbreaks, but they are willing to provide free labor to install them. In response to their requests, the

government is planting 170 additional kilometers of windbreaks this year."

The Majjia Valley project has broken new ground in testing and demonstrating the effectiveness of neem tree shelterbelts as a technique to reduce soil erosion from wind and rain. The growing strands of neem trees also provide a supplementary source of fuelwood for the community.

"In Africa, we are also looking at long-term answers to effectively address the issue of environmental degradation," Catterson says. The Famine Early Warning System (FEWS) project, which will start in 1987, will provide promising data for this purpose. FEWS, which has a satellite remote sensing capability, will help establish national capabilities in developing countries to provide planners and decision makers with timely and credible information on natural resource conditions.

Out of the Woods?

Deforestation also is a serious concern in Latin America. Most of Central America once was covered by forests. Yet, by 1970, only 49% of the region was forested. The rate of deforestation is rapidly accelerating. The major cause of deforestation in Central America is the conversion of forest lands to agriculture, though the demand for fuelwood and commercial logging also contribute substantially to resource depletion.

Since 1980, AID has helped support the Fuelwood and Alternative Energy Sources project, a five-year, \$5 million regional effort based at the Center for Research and Training in Tropical Agriculture (CATIE) in Costa Rica. The project has helped determine tree species suitable for small farmers to plant for fuelwood. It also analyzed the best growing techniques and critical areas of fuelwood demand. Trials conducted throughout Central America identified 30 promising tree species now being adopted by farmers.

The Caribbean nation of Haiti faces particularly severe deforestation problems.

"Haiti was once covered by forest land," notes Hester. "Today there remains only one forest of significant size." To help the government of Haiti address this problem, AID is developing a reforestation program

that is carried out through private voluntary organizations such as CARE and the Pan American Development Foundation.

"In the past, there have been many attempts at reforestation in Haiti," Hester stresses. "None has proven successful. But because there are some

AID encourages rural development in ways that protect the environment.

70 active private voluntary groups in Haiti, AID is trying a new approach by working through these groups to more effectively reach the people in the countryside."

Through the \$21.5 million, 10-year project, which began in 1981, four to five million trees will be grown and distributed to farmers in the countryside. Farmers also will be taught proper maintenance procedures.

The largest share of AID's investment in forestry is in Asia. "Over the last decade, we've seen a transition occurring in Asian forestry from an orientation toward commercial timber production and exploitation of public forest lands to one emphasizing the role of forestry in meeting rural development needs," says Robert Ichord Jr., chief of the Office of Energy and Natural Resources in the Bureau for Asia and Near East. Approximately \$200 million currently is obligated for forestry programs in the region with over half of the projects being carried out in India.

Upland agroforestry and watershed management is one component of the Agency's Asian forestry program.

"There is increased population pressure on the fragile watershed areas of Asia," Ichord explains. "AID projects in Thailand, the Philippines, Indonesia and Nepal are seeking to establish systems of upland management that reduce environmental damage and incorporate sustainable agricultural practices."

Support also is provided for several major rural tree-planting programs in South Asia aimed at meeting the multiple needs of rural communities for fuel, fodder, fiber, income and soil conservation.

An improved research base for these programs is an AID priority. Efforts are under way to help launch an Asian Forestry and Fuelwood Network Center at Kasetsart University in Thailand. The center is expected to stimulate innovative research on the social and biological aspects of multipurpose tree species, which will increase the productivity of tree material and improve the management and adaptation of new forestry technologies.

AID has been working closely with the Peace Corps to increase the number of volunteer assignments in forestry and natural resources. About 500 volunteers in these fields are located in 43 countries. The number of forestry volunteers working directly on AID projects more than doubled in the last six years.

On Firm Ground

Soil degradation is a major environmental problem related to deforestation. As croplands become overworked or mismanaged, erosion increases dramatically, and agricultural and forest productivity of the land declines.

In Guatemala, 40% of the productive capacity of the land has been lost because of erosion, and several areas of the country have been abandoned because agriculture has become uneconomical. Cleared areas of Nepal lose between 35 and 75 metric tons of soil per hectare per year. In India, one-fourth of the total land area has been eroded by wind or water.

AID's strategy is to address the problems of soil degradation by encouraging sound management practices in development projects. The Natural Resource Management project in Honduras is an example. Launched in 1980, the project was designed to strengthen the Honduran government's natural resource management capabilities and to improve soil and water conservation practices in the Choluteca Watershed, home to some 750,000 or one-quarter of the nation's population. The watershed suffers from heavy soil erosion—about 20 tons of soil per hectare each year. If no corrective measures are taken, the most valuable soil layers will be lost in the next 20 years. The economic consequences translate into

a loss of \$9.3 million per year, a significant portion of the Honduran annual income.

The AID project joined the forces of the Honduran Ministry of Natural Resources and the National Cadaster Program to reverse severe erosion on some 7,000 farms in the area. An integrated extension system of Watershed Management Units was created to help farmers improve cropping systems and patterns, promote agroforestry and pasture improvement, and reforest eroded areas.

Man-made Risks

Rapidly expanding population growth increases pressure on the agricultural sector to produce more. This increased production must be achieved through means such as effective control of pests on lands currently under cultivation. "It is not surprising in this context that world pesticide sales grew from some \$8 billion in 1972 to almost \$13 billion in 1983 with the most rapid growth occurring in the developing countries," says Pat Koshel, energy and environment policy advisor in AID's Bureau for Program and Policy Coordination. As pesticide use increases, health and environmental effects need to be carefully monitored.

"In developing countries, where there is less awareness of pesticide

AID has been an innovator and a leader in finding the balance between conservation, and development.

toxicity, farmers often do not have the knowledge or the facilities to use pesticides properly," notes Koshel. "Some countries are making progress in enacting legislation to regulate pesticides, but there is still little capability for effective control."

AID is strengthening the indigenous capacities of developing nations in proper pesticide management. For example, a \$6 million grant was authorized in 1984 for the five-year Integrated Pest Management project at the Center for Research and Training in Tropical Agriculture (CATIE) in Turrialba, Costa Rica. The project is reinforcing national and regional ca-

pabilities for integrated pest management through research, long- and short-term training and technical cooperation.

The World Bank recently has joined with AID, in an effort deemed critical to agriculture and health, to educate people in the safe use of pesticides. Two years ago, AID assisted the World Bank in developing pesticide guidelines and now is helping the bank examine projects that incorporate the environment with other concerns.

An increasing concern is the growing number of hazardous and toxic waste accidents that occur in developing nations. In 1984, the Bhopal gas leak in India that claimed thousands of lives portrays the disastrous effects such accidents can have. AID recently has joined forces with U.S. corporations to respond to industrial accidents. Steve Lintner, environmental coordinator in the Bureau for Asia and Near East, explains, "Through a pilot project begun last year with the New York-based World Environment Center, U.S. industrial experts volunteer to work with petrochemical, chemical, paper and manufacturing facilities in developing nations to create systems to meet emergency needs."

The new project builds on an existing five-year AID program with U.S. industry known as the International Environment and Development Service (IEDS) that began in 1983. IEDS sends industry volunteers to eligible countries to identify environmental problems at the plant level and to recommend remedial action. More than 25 American companies are participating in the program.

Whether the concern is dealing with an industrial accident or reversing long-standing trends that are leading to soil degradation and deforestation, the environment has come to play an increasingly important role in the process of sustained economic growth and development. AID has been an innovator and a leader in finding the balance between conservation and development, thereby working to both preserve the natural heritage and enhance the quality of life for mankind. ■

by Raisa Scriabine

U.S. Agency for International Development
Bureau for External Affairs
Washington, DC 20525
(202) 647-4330
February 1987