International Food Policy Research Institute
2020 Brief 29, August 1995

Poverty, Food Secutity, and the Environment

by Per Pinstrup-Andersen and Rajul Pandya-Lorch

The condition of the world's natural resource base in the year 2020 largely depends on whether poverty has been eradicated. Poverty and environmental degradation are closely linked, often in a self-perpetuating negative spiral in which poverty accelerates environmental degradation and degradation results in or exacerbates poverty.

Poverty is a significant, persistent problem in the developing world. An estimated 1.1 billion people live on less than a dollar a day, and their number is not expected to decline in the near future. South Asia is home to half of the world's poor, but Sub-Saharan Africa is becoming the new locus of poverty. Hunger is a major consequence of poverty. Over 700 million people do not have access to enough food for healthy, productive lives, and more than 180 million children are significantly underweight.

Worldwide, almost 2 billion hectares of land (about 15 percent of vegetated soils) have been degraded since 1945, about 300 million hectares of which have suffered such extreme degradation that reclamation of their original biotic functions may not be feasible. Two-thirds of the world's degraded lands are located in Asia and Africa, but human-induced degradation is most severe in Central America and Mexico, where one-quarter of the vegetated land is degraded. About 15 million hectares of forests are cut down each year, much of it for conversion to agricultural use by farmers.

Overgrazing, deforestation, and overexploitation for fuelwood account for about 70 percent of global soil degradation since 1945. To a large extent, these problems result from or are exacerbated by inadequate property rights, poverty, population pressure, inappropriate government policies, lack of access to markets and credit, and inappropriate technology for agricultural intensification. Faulty agricultural practices, which account for another 28 percent of soil degradation, may also be partly attributable to poverty.

Why Would the Poor Degrade Their Environment?

Poor people depend heavily on the natural resource base for their basic needs, such as food, energy, water, and housing. Their livelihood is closely tied to the well-being of their resource base. So why do they degrade their livelihood source? People use and overuse every resource available to them when their survival is at stake and they have run out of alternative mechanisms for survival. Desperate hunger leads to desperate strategies for survival. At that point, conservation of natural resources for their own future welfare or the welfare of their children is less important to them.

Poor people often lack sufficient incomes or access to credit to purchase appropriate tools, materials, and technologies to practice environmentally sustainable agriculture, protect natural resources against degradation, or rehabilitate degraded resources. Other factors that trigger the poverty-degradation relationship are loss of entitlements by the poor or loss of the capacity to support themselves sustainably. Poor people may lose traditional access to resources if they are displaced by population pressure that reduces their access to land, by misappropriation of common resources by other claimants, and by activities such as construction of dams and creation of wildlife preserves that take land out of use by the poor. In response, the poor may be forced to migrate to marginal lands. They may move higher and higher up hillsides or cut down forests for agricultural land and fuelwood.

Population growth is a key catalyst of poverty-led environmental degradation, especially in marginal lands. Rapid population growth diminishes farm sizes and ultimately pushes people off the land to search for land and employment opportunities elsewhere. Landlessness is a growing problem in developing countries. Wars, social strife, and natural disasters such as drought also force people to become more mobile. As populations concentrate in areas not yet degraded, they invariably speed up the degradation process. Large-scale migration both within and between countries may not only cause environmental degradation, it may also result from it.

The existence of externalities--a situation in which the costs of a decision made by a person or group of persons may have to be borne by others--is a major reason why poverty results in environmental damage. Property rights are particularly prone to externalities. Resources with open access are vulnerable to exploitation because exploiters may benefit without paying the costs associated with reduced future productive capacity. While private landownership is often most effective in achieving food security and sustainability goals, it is not always superior to common ownership. Neither does state ownership of natural resources assure their appropriate use: some of the worst cases of environmental degradation have resulted from inappropriate use of natural resources owned and operated by the state. The poor usually do not own resources or reap the benefits of conservation and thus have few incentives to conserve soil, protect groundwater, or preserve trees.

Poverty need not lead to environmental degradation. It is the combination of poverty, population increases, land constraints, and lack of appropriate agricultural technology that usually results in environmental degradation. Where population pressures on the land base are not strong, poverty may be compatible with appropriate natural resource management. There are many examples of poor people who coexist in harmony with their marginal environments. However, such examples are becoming fewer as population pressures strain against the boundaries of fragile lands.

We must confront poverty if we are to prevent the poverty-degradation cycle from being perpetuated. The poor are the stewards of much of the world's natural resources, especially the fragile natural resources. They are going to do their best to survive, even if it means that ultimately they have to degrade their resource base and compromise their future. Policies to prevent further degradation must recognize this instinct for survival and the behavioral responses it generates, or they are doomed to fail.

Helping the Poor and Protecting the Environment

Continuing to neglect the low-potential, vulnerable areas where many of the world's poor live will only make degradation worse and perpetuate poverty. Whereas the long-term solution for some of these areas may be outmigration, most countries cannot accommodate the movement of large numbers of mostly poor and uneducated people in the short term. While failure to address the problems effectively in the low-potential areas themselves will accelerate degradation, outmigration transfers poverty and population pressures to urban areas and rural areas with better natural resources. There is growing evidence that agricultural intensification in fragile lands is possible and that degraded natural resources can be rehabilitated. Accelerated investments in agricultural research and technology, rural infrastructure, family planning, education, primary health care, and appropriate policies are urgently needed to eradicate extreme poverty and associated food insecurity and environmental degradation.

Agricultural research and resulting technologies can simultaneously increase food production and protect the environment. There does not have to be a trade-off between meeting future food demands and maintaining the natural resource base. Yield-enhancing technology is the key to sustainable agricultural development. Research must be intensified to enhance yields and improve production systems for crops and livestock, including grains, roots, tubers, and a variety of large and small livestock, that form a large part of the diets of the poor and contribute to their incomes. Research can also help breed into plants tolerance or resistance to adverse production factors to minimize the risks faced by farmers. Improving yields on high-potential lands can reduce pressure on fragile lands; production technologies and techniques can be developed for fragile, environmentally threatened, or degraded areas.

Timely, reasonably priced access by farmers to modern inputs, such as improved plant varieties, fertilizers, integrated pest control measures, tools, and water, must be facilitated through improved rural infrastructure and institutions and through access to credit and technical assistance. Education and timely transfer of information can extend the knowledge base of farmers. Improved farm management practices must be communicated to all farmers, male and female.

Institutional and market distortions adverse to the poor such as those related to input and output markets and asset ownership should be minimized or removed. Access by the poor to productive resources such as land and capital needs to be enhanced. Expanded investments in rural infrastructure, primary health care, and education are needed to enhance income earnings and food security among the rural poor and thereby lessen the pressures on natural resources.

Renewed emphasis must be placed on efforts to reduce population growth in developing countries, through universal access to reproductive health information and technology. Otherwise the risk of environmental degradation from increased population pressures will increase, and efforts to improve incomes and reduce poverty will be hampered.

Incentives and, where necessary, regulatory policies must be strengthened to compensate for externalities related to natural resources. While subsidies, taxes, and other incentives are usually

preferable to regulatory measures, they should be used selectively and carefully because of possible unintended market distortions, opportunities for rent-seeking, and high fiscal costs. Regulations that contradict the survival strategies of the poor are unlikely to be successful simply because they are difficult or impossible to enforce. However, regulations will be necessary where incentives are unlikely to achieve social objectives.

Conclusions

While poverty is not the only cause of environmental degradation, it does pose the most serious environmental threat in low-income developing countries. The many millions of people who live near the subsistence minimum will exploit natural resources to survive. We must not blame the victims but must seek to eradicate extreme poverty. Accelerated agricultural intensification is a key component of the strategy to alleviate poverty and protect the environment. Sustainability of future agricultural development must be ensured, otherwise we undermine the welfare and survival of our own species. Contrary to what some will have us believe, agricultural development is part of the solution to protect the environment, not part of the problem.

Per Pinstrup-Andersen is director general and Rajul Pandya-Lorch is special assistant at the International Food Policy Research Institute.

"A 2020 Vision for Food, Agriculture, and the Environment" is an initiative of the International Food Policy Research Institute (IFPRI) to develop a shared vision and consensus for action on how to meet future world food needs while reducing poverty and protecting the environment. Through the 2020 Vision initiative, IFPRI is bringing together divergent schools of thought on these issues, generating research, and identifying recommendations. *The 2020 Briefs* present information on various aspects of the issues.