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New Strategies and Successful Examples for Sustainable Development in the Third World

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NEW STRATEGIES AND SUCCESSFUL EXAMPLES
FOR SUSTAINABLE DEVELOPMENT IN THE THIRD WORLD*

Michael Lipton

INCOME, THIRD WORLD POVERTY, AND ENVIRONMENTAL DEGRADATION

I am constantly astonished at the extent to which most farmers in the Third World conserve their environments. If you and I lived as they do, we should be very tempted to use up the private and common property available to us very quickly.

These people are usually poor and uninsured. To such people, the guarantee of survival this year and next year is very important. The case for conserving the rural resource base -- for old age or for one's children -- might seem remote. That is especially the case in much of the Third World -- not many people live to be very old, and many of their children abandon their rural base and look for work in cities. These conditions encourage degradation of both private and common rural property.

When the rate of interest is very high -- and poor people in the rural Third World commonly pay 25-50 percent in real terms-- investment in long-term conservation of private property is not appealing; "soil mining" is. National agricultural researchers are often paid, and pressured, for innovations that increase short-term yield, not long-term sustainability.

Poverty and population growth also do several things to encourage the degradation of common property resources. CPRs are rights to fuelwood, water, grazing, or fishing, which may be used by any member of a group of "entitled" rural families or village. Poverty increases the pressure on each "entitled" person to use up more of the CPRs (for example, by grazing more animals on the common lands). Population growth, meanwhile, raises the numbers of entitled persons. Poverty and population growth also increase the numbers of people in nearby communities -- and the pressures on such people to encroach on CPRs to which they are not entitled. These effects increase the cost of supervising the CPRs: of rationing (or pricing) them for the legitimate users, and of keeping others out (or getting them to pay up). Also, population growth (and the degradation of the CPR) reduces the benefits per person of such supervision. Such effects cause common grazing land, water, and fuel to be increasingly

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overused and degraded.

So it is quite surprising that, in fact, poor farmers in the Third World husband resources rather carefully. Farming couples, even before they have children, seldom engage in soil mining. Instead, they seek to maintain land quality, often despite bad advice to the contrary. Even sharecroppers, liable to be moved off their current plot at year's end, seek to maintain a reputation with landlords as not only energetic but also resource-conserving farmers. Common grazing and water rights for cattle are typically controlled quite skillfully in traditional pastoral systems, with clan leaders seeing that users rotate or cull beasts and maintain grazing land.

Reduced poverty, higher average incomes, and secure tenure (even on very small holdings) normally reduce environmental degradation. That is partly because the beneficiaries can more easily borrow at reasonable rates of interest. Nevertheless, the degradation can be accelerated by some of the methods through which rural poverty is attacked: by high levels of pesticide use; over-exploitation and erosion of marginal lands; by irrigation systems designed without a longer view; perhaps above all, by the dangerous nonsense of believing that one should strive for "low-input, high-output agriculture," without specifying how to increase the efficiency with which nutrients, water, and sunlight are converted into salable or edible farm outputs.

The role of population pressure in linking poverty to environmental degradation is complex. Parents are usually rather rational in their decisions about how many children to produce. If the best prospect of a decent old age is the secure support of one or two educated children, couples prefer that. If the best prospect requires many children -- because some will die young, others will be unemployed, and even the employed will be uneducated and thus can earn and remit little -- couples feel they must produce many children. Ready access to cheap and aesthetic means of contraception of course also influences the choice. So does female education -- by delaying marriage, informing potential mothers, and raising the costs of extra children. Clearly, however, there is very little truth in the old idea that poor parents degraded their environments because of what the colonial censuses in India called "improvident maternity."

If farmers normally look after their environments (both in private property and in CPRs) carefully, and if population increase is not a "stupid" result of decisions that cause environments to degrade, what outside actions are causing more rapid degradation of rural resources? We tend to blame mainly actions by Third World governments. Undoubtedly, these governments have made -- and have been politically pressured to make -- serious errors; neglecting their rural sectors above all. Yet many of our own governmental actions in the West are also indirectly encouraging poor rural people to degrade their environment and the world's.

Through the 1980s, actions by Western monetary authorities have been pushing up real rates of interest, including those paid by governments and rural people in the Third World, to unprecedented levels. This is partly because some Western governments have greatly increased the demand for foreign lending, so as to finance their own budget deficits. Some Western governments have so acted to increase the real value of currencies (mainly dollars) in which Third World debt is denominated. The need to pay off debt at artificially high interest rates makes governments desperate for short-run outputs (and taxes) from farmers, so that neither farmers nor governments can pay for investments in long-run environmental support. More fundamentally, the rising real interest rates also affect rural borrowers' incentives. Even quite wealthy farmers are discouraged from "thinking long." For poor farmers, normal, conservationist behaviour becomes prohibitively expensive.

Especially in Europe, Western governments have been adopting domestic farm policies that depress and destabilize world prices for many Third World agricultural products. This diminishes both the cash available to Third World farmers (and governments) for all purposes, including the incentive to use it for maintaining the long-run capacity of farmland -- for why should hard-pressed farmers, or governments, place great emphasis on conserving the capacity of farmland to produce outputs, if those outputs face artificially unfavorable and unstable world prices?

Western governments have denied the international agricultural research system the resources it needs to improve sustainability of farming. For example, international crop research institutes want to examine the positive and negative effects of alternative fertilizer application practices or yields of tropical and subtropical soils over long periods, not just in a single season. But that needs much more land, labs, and cash than does the standard single-season research. So does the vital task of increasing and preserving the diversity of high-yielding food varieties and plants, and of the environments where they grow well. Yet real resources for the Consultative Group on International Agricultural Research -- which finances such crop research centers as the International Rice Research Institute in the Philippines, and the International Center for Wheat and Maize Improvement in Mexico -- have hardly risen for several years. It is high time the West welcomed the Soviet Union as a partner here, playing its full part in supporting the costs of the international agricultural research system. Further, it is necessary to reverse the trend among some donors to "tie" their contributions to the fashions of the moment. This reduces core funding, which is essential for research institutions seeking to address the new conceptualizations needed to analyze and improve agricultural sustainability.

We have allowed, perhaps encouraged or even indirectly compelled, international lending agencies to shift support away from agriculture and away from the poorest countries, toward general-

purpose loans for import support -- that is, in practice, toward debt relief for richer developing countries and, indirectly, for commercial banks in developed countries. The proportion of World Bank disbursements (International Bank for Reconstruction and Development and the International Development Association) for projects in agriculture and rural development fell steadily, from a peak level of 30 percent in the three years 1977-79 to only 17 percent in the three years 1986-88. In real terms (constant dollars), disbursements for these projects fell by 23 percent of the peak level. Within such diminished totals, international support for agricultural credit programs, especially in Asia, is threatened by exaggerated objections against rural credit agencies that achieve inadequate financial cost recovery, even though the credit programs have usually offered excellent economic returns. Withdrawal of support for such credit programs not only cuts into resources for conserving farm environments, but further raises rural interest rates so that farmers are further discouraged from "thinking long."

SOME STRATEGIES TO RELIEVE POVERTY AND POPULATION PRESSURES ON THE ENVIRONMENT IN DEVELOPING COUNTRIES

I shall look briefly at some leading strategies to relieve poverty and population pressures, and then ask how each alternative might affect environmental stability. The main antipoverty strategies that have been widely attempted are (a) public works, (b) food distribution, and (c) creating or distributing assets for the poor. Each has successes and problems. The key to success is effective targeting on the poor. This requires incentives to the administrators of antipoverty programs to produce results -- defined as households that become self-sufficient and escape from poverty, not as program money spent. Schemes that target themselves -- by distributing coarse grains in areas known for high poverty incidence, for example -- have usually succeeded better than schemes that rely upon administrators to decide who is poor or how beneficiaries should use the gains from a program.

The World Bank has considerable experience with poverty reduction, some of it rather successful. This is being reviewed for the 1990 World Development Report. The Overseas Development Council has explored interactions between poverty reduction and environmental change. I shall say a few words about each of the three main antipoverty strategies -- public works, food distribution, asset distribution -- with some reference to environmental effects in India, which has the most experience of these schemes.

Public Works

Public works programs have probably the best capacity for mitigating environmental degradation. Irrigation and drainage maintenance, including clearance of waterweeds from tanks and canals, is one example. We need to be sure that environmental protection

components of public works programs are well conceived. Contour bunding, once popular in Western India, is now discredited.

India's most celebrated antipoverty program of public works is the State of Maharashtra's Employment Guarantee Scheme (EGS). This provides a guarantee of rural work in the slack season. The work is paid for at rather low piece-rates, but is guaranteed within about five miles of the home village.

The EGS depends heavily on a big "shelf" of well-prepared works projects. As the shelf becomes barer, the scheme becomes more costly. Sustainability of antipoverty programs is thus a financial issue as well as an environmental one.

However, most evaluations of the EGS are favorable. It provides several million persons per day with slack-season work, especially in bad years. Women and lower castes benefit more than others, even in proportion to their numbers.

Food Distribution

What about food distribution schemes? If they reach their targets -- the undernourished poor, especially rural children in the most vulnerable age group, aged six months to two years -- there are good environmental side-effects. These poor households, if they become less desperate for want of income to buy food, are less likely to be driven to degrade marginal lands and common property, especially fuelwood. Extra food in such households can help solve the problem.

General, untargeted schemes, however -- such as the programs of two Indian state governments, Andhra Pradesh and Tamil Nadu, to feed all schoolchildren free -- tend both to miss the poorest and to prove unsustainable fiscally. Carefully targeted programs, such as the World Bank-supported Tamil Nadu Integrated Nutrition Program, have proved considerably more successful.

There is strong reason to believe that diarrheal infection is a more important cause of poor nutrition-health status and negative functional consequences among the Third World's rural poor than simple lack of calories, though the two causes interact. In Narangwal, in the Indian Punjab, child health status was improved much more by US\$1000 divided equally between food supplementation and preventive child health care, than if spent entirely on either one or the other.

Asset Distribution

The classic example of attacking poverty by asset distribution is the redistribution of private ownership of land to the very poor. In Indian circumstances this usually raises output. With reasonable compensation, such programs are more acceptable -- and have had more

impact -- in India and other developing countries than the conventional wisdom suggests. Land reform is likely to improve preservation of the soil-water environment because it is associated with less division of responsibility among landowner, hired worker, and, perhaps, tenant or manager; more "direct supervision per acre" as the family entrepreneur replaces the big farmer; and more secure rights to land. Donor support could well be increased for carefully considered, compensatory schemes to redistribute private land rights. Lacking such support, however, most Indian states have found such schemes too costly, financially and politically.

The world's biggest program to create assets for the rural poor is India's Integrated Rural Development Program. It is a misnomer, since the program seeks "only" to provide identified poor households with a productive nonland asset. Most often this is a milch cow or buffalo (stall-fed or on common grazing land). Sometimes the asset is an artisan requirement such as a sewing machine. At least two-thirds of the money for the asset is loaned; the rest is a subsidy. The program has been convincingly criticized for diverting some funds to the nonpoor; for glutting some local markets (for example, for milk); and for weak technical preparation and managerial support. Yet the program's harshest critic agrees that it has pulled "only" 3 percent of poor rural Indians over the poverty line. I know of no discussion of the environmental impact of this vast program.

Education and health programs can enhance the human capital of the poor (if there is a market in which they can sell their increased skills or capacity). When we look at the interaction between population, poverty, and the environment, we should not look at the environment only in terms of the sustainable capacity of land to grow affordable food (or crops that can be sold to buy food). Most undernourished children are undernourished mainly because of repeated infections, reducing appetite and draining energy. Development programs need to be vetted for their effects on the total food-health environment, not on food alone.

Population

Clearly, strategies to reduce population growth in humanly acceptable ways have major prospects for safeguarding environments, accelerating growth (by improving families' capacity to save), and reducing poverty (for the poor tend to have the largest families, and the most small children per adult). More female education and more employment prospects for women in modern activities are demonstrably effective ways of reducing voluntary fertility. Low-cost, readily available contraceptives also have a major role. Unfortunately, cost considerations have impelled many Third World governments, strapped for cash, to concentrate support for family planning on urban areas. Foreigners must be very careful not to interfere in population policies, but can help safeguard worldwide environments by offering direct support to Third World countries seeking to design and supplement acceptable programs of family planning, especially for

marginal or overpopulated rural areas. In particular, governments of developed countries should support the UN Fund for Population Activities, which is currently denied US funding on the suspicion-- I believe quite wrong -- that it supports nonvoluntary programs. It is hard to see how concern for environments in Africa, threatened with desertification or other results of overfarming, is consistent with neglect of population growth, now well above 4 percent a year in some of the countries at greatest environmental risk.

WOMEN AND CHILDREN AND SUSTAINABLE DEVELOPMENT

In almost all countries, women have worse prospects than men for education, good jobs, and promotion. Because total prospects are worse in developing countries than elsewhere -- fewer school places, fewer good jobs -- men are especially keen to defend their privileges, and women's prospects are relatively much worse than in richer countries. This is obviously unjust. In extreme cases -- and there is evidence of this in some villages of Northern India and Bangladesh -- little girls die of malnutrition while boys and adult men are given enough to eat. Discrimination against women is also extremely inefficient. Able women are kept out of universities and key jobs by not-so-able men.

But we must beware of blaming the victims. Given their social circumstances, poor families must try to ensure their overall welfare -- in extreme cases, their survival. If there are resources to put one child through high school, it will usually be a boy who is sent, because schooling will do more for his chances of a better income than for his sister's chances. If food is short, the family will first see that the members most likely to earn income and buy food-- adult men -- are fed enough to seek and complete paid jobs. Reducing poverty, helping the poorest to borrow for land purchase, providing more rural education of decent quality for children, women, and men: these, not lecturing fathers about sexism, are the keys to full participation by women in the development process.

Work at IFPRI shows that extra income in the hands of women does a little more to improve children's health than in the hands of men. However, we should avoid the "liquidity theory of income" -- the notion that if Father gets more income he drinks it as alcohol, but if Mother does so she feeds it to children as breastmilk. This is simply a prejudice -- sexism in reverse. In trying to accelerate and humanize the development process, reverse sexism is not the remedy for direct sexism; poverty reduction is.

Nor is there any serious evidence for the mystical view that women are somehow more pro-environmental than men, more in tune with nature and conservationist in their farming or other behavior. It is, however, clear that women are in some respects more vulnerable to the effects of resource degradation, because in most Third World rural societies it is women who are, literally, hewers of fuelwood

and drawers of water. As intensive farming spreads away from the village lands, women must walk further and further, using ever more time and energy to obtain fuelwood and water. Studies in the hills of Nepal by Shubh Kumar of IFPRI have shown that this reduces women's capacity to supply labor to agriculture in the busy season.

Child labor in developing rural areas poses a severe dilemma. It seems cruel, inconsistent with education and development. Yet it meets the desperate need of poor families for income from labor-power -- often their only asset. If child labor could be stopped by law (which is unlikely), the poorest would become poorer still and more hard-pressed to go for immediate income at whatever environmental cost. But something can be done. In the short run, school terms should be timed to avoid clashes with agricultural peak seasons and stringent controls should be enforced upon employers of child labor in those activities (such as matchmaking and carpet weaving) where clear health hazards exist. Meanwhile, changes in agricultural technology and in poor people's access to income-earning assets (including land) are required, alongside improvements in the quality and usefulness of rural education. As these requirements are met, increasing enforcement of laws against child labor will become feasible and desirable.

TECHNOLOGY TRANSFER, EDUCATION, AND TRAINING TO INCREASE THE SUSTAINABILITY OF DEVELOPMENT PROGRAMS

Western countries can do much for agricultural sustainability, via technology transferred through increasing the resources for international agricultural research and seeking new sources of finance for it (for example, the Soviet Union). But other things that Western governments do -- artificially pushing real rates of interest up and farm commodity prices down -- can undermine or reverse such contributions to sustainable agricultural progress in the Third World. Let me now be more specific about the scope and limits of technology transfer, education, and training for these purposes.

Seeds and techniques can very rarely be transferred from temperate to tropical farmlands. Agricultural extension, however, can greatly speed up the process of transfer among tropical or subtropical farmers, provided that such farmers are in an agroecology -- and face prices and markets -- that make the recommended crops or seeds and inputs or methods reasonably profitable and safe. An important and largely neglected area is agricultural extension for migrants -- often so-called "illegal squatters" -- to new lands and new marginal areas. Lacking extension, such migrants are prone to needlessly degenerate unfamiliar soils and to conflict, often equally needlessly, with traditional (tribal), shifting cultivators.

However, a lot of resources have been wasted, or worse, in beefing up agricultural extension systems where there was nothing

appropriate to extend. In such circumstances, the first requirement is for more research. Transfer of research techniques and support and planning from the international system can greatly accelerate progress in the Third World. Both in agricultural extension and research, Western countries can help to increase outputs and improve sustainability. These appear ideal areas for aid, because the returns are high but occur in the long run -- it takes 5 to 15 years of design and testing between initiation and delivery of research for a typical improved cereal variety. In Asia and Latin America major gains in food production have been achieved through the interaction of national agricultural research systems, the international research centers, and funding and planning support from Western countries. I shall say a little about sustainable impacts and options later, but first a word of caution is needed.

In Africa only a small number of countries -- including Zimbabwe, Malawi, Botswana, and Kenya -- have enjoyed governments willing to steer domestic cash towards agricultural research and provide working conditions that train, pay, and encourage scientists to stay in the national research system. Without firm government commitments in these matters, foreign support to national agricultural research is like pushing on a piece of string. And without sound national agricultural research systems, the products of the international system usually cannot be spread -- certainly not quickly or safely. New varieties of cereals, for example, can be taken over from an international center, but need to be adapted to local conditions and protected against new, often localized, biotypes of pest and disease. Donors should provide capital and technical support for national agricultural research generously to developing countries, but only to those willing consistently to back such research with national commitments of current domestic cash, people, and training.

If such requirements are met, there are several areas in which technology transfer and training in agricultural research can increase sustainability. I shall concentrate first on a couple of areas where new work is required to generate something useful to transfer.

The most important issue probably concerns assistance to maintain the genetic diversity of varieties and cropping systems. New dwarfing genes, especially for rice, are crucial, as well as more work (including basic research) on how to breed in horizontal resistance or tolerance to pests and diseases, instead of relying on single-gene resistance.

Where rapid population growth is inducing a shift towards settled agriculture, or is shortening fallows, better use of nutrients and water is also necessary to prevent degradation. In fragile soils, such as many of those in semihumid parts of Africa, and in conditions of moisture stress of uncertain severity and timing, there are big knowledge gaps. As for nutrients, simply

piling on inorganic fertilizers will not help much in porous soils with little organic matter. And as for water, trying to make West African rice lowlands perform like Asian paddies -- so-called "swamp development" -- has proved unsustainable, because too little is known about swamp hydrology. In the medium term, Africa certainly cannot handle its burgeoning populations without much more irrigation--preferably managed by small farmers and not remote officials -- and much more fertilizers. But more knowledge, and the local capacity to apply it, are needed first, if the agriculture created is to be sustainable.

In the overlap between training and technology transfer, there are several areas where new techniques are being spread to smallholders too fast -- faster than knowledge of how to use them well. This sometimes poses severe environmental threats. For example, pesticides are often used in excessive doses. In Andhra Pradesh, India, I met farmers who were using EDB on stored rice at several dozen times the recommended rate. Clear, pictorial guidance, on each of the small packages of pesticides that smallholders buy, would reduce the threat to the food chain.

An overriding threat to soil and water resources in the Third World comes from the steady intensification of farming on marginal lands. There are two ways to handle this (until agricultural populations stop growing). The first way is more inputs and incentives for research on the most intensively farmed lands -- the Punjabs and the Sonoras of the world. The second way is to develop crop-mixes and rotations, erosion control methods, and micro-irrigation that can be profitable even on marginal lands. There is no universal right answer; but crop scientists, like other people, tend to try to do again what they have done successfully before. This leads, perhaps, to underemphasis on soil-water-crop conditions that have long been neglected and have therefore come to be regarded as unpromising.

Finally, whether intensive or marginal cultivation is emphasized, we all -- in rich and poor countries; and in education, research, or technology transfer -- need to recall a central issue. What needs to be "sustainable" is not a particular form of farming, nor a particular use of this or that piece of land. What has to be sustained is the capacity of people, countries, and the world to support decent livelihoods. An important implication of this becomes clear when we consider that a growing majority of the world's poor derive their sustenance not from farming their own land, but from working for other farmers as employees. How are their livelihoods, and the soil and water that support them, to be sustained? Patterns of farming that are labor-intensive yet resource-sparing need to be extended, transferred, or (sometimes) invented. Examples are using more labor but increasing the productivity of small amounts of nutrient by placing slow-release or mudball fertilizers in the root zone, thus substituting employment for chemicals; and intensive management (for example, by cross-bunding) of irrigation and

drainage, substituting employment for water. Such inputs as tractors, threshers, and weedicides -- which substitute cash purchases for employment, and at the same time may require more skillful management to sustain the environment -- are sometimes desirable in Third World agricultures. But if our perspective is that of sustainable livelihoods, there is always a strong presumption against any subsidy to such inputs, or to research on them.