

*Empowering the poor with resource rights
can enable them to manage ecosystems better
and significantly increase their environmental income.*



FOUR STEPS TO GREATER ENVIRONMENTAL INCOME

THE WEALTH OF NATURE, IN THE FORM OF ENVIRONMENTAL

income, is already a key component of rural livelihoods for both the rich and poor. But there is great potential for this component to grow, given the right conditions, and contribute to higher household incomes that lessen poverty. The first condition is an acceptance that better management of ecosystems can increase their productivity—immediately and over the long term. And, since the wealth of nature flows directly from the productivity of ecosystems, better management brings the potential for greater environmental income.

The second condition is that the access to and control of nature shifts so that the rural poor can both see the advantages of good ecosystem management and claim the benefits from it, overcoming the obstacles of disenfranchisement that have kept them economically and politically marginalized.

In this chapter we explore both these conditions—prudent management of ecosystems and governance that empowers the poor to profit from it. We consider the questions: What do we mean by better ecosystem management? What is its potential for poverty reduction? And what governance changes are required to route environmental income to the poor?



In addition, we examine the factors besides governance and eco-friendly practices that support the evolution of environmental income for poverty reduction. These revolve around the need to find successful models to commercialize ecosystem goods and services, coping with such constraints as marketing, transportation, and the need to capture greater value from nature-based enterprises than the poor often do. In addition, we consider the potential for “payment for environmental services” (payments for preserving the functions of ecosystems, such as water supply or carbon storage) to contribute to the portfolio of income-generating enterprises based on nature that the poor can tap.

In examining these factors, we put forth four steps to generate greater environmental income for the rural poor.

1 MORE INCOME THROUGH BETTER ECOSYSTEM MANAGEMENT

Healthy ecosystems work at peak productivity; degraded ecosystems produce less, particularly of the forest products, forage, clean water, crops, and bushmeat on which the poor tend to rely. In fact, degradation of ecosystem functions—in the form of nutrient-depleted soils, overgrazed pastureland, logged-over and fragmented forests, and overfished lakes and

coastal waters—has become a serious impediment to the livelihoods of the poor.

As the findings of the recently concluded Millennium Ecosystem Assessment show, ecosystem decline is widespread. The global drop in ecosystem health not only undermines the natural resource base that anchors a substantial fraction of the global economy but erodes the planet’s life-support systems more generally (MA 2005a:1-24). The most immediate victims of this decline are the poor, whose household economies, as shown in Chapter 2, depend heavily on ecosystem goods and services. The pressures on ecosystems are particularly intense on many common property lands and fisheries—the most important source of environmental income for the rural poor. Examples are many and distributed on every continent and sea: denuded hills in western India; exhausted forests in Madagascar and Haiti; and depleted catches off Indonesia, Jamaica, or Fiji are just a few of the many instances where overuse and abuse of ecosystems directly impacts the poor.

Better Management Requires an Ecosystem Approach

But ecosystem decline is not inevitable. Ecosystems are resilient and can be sustained through practices that accommodate their



inherent biological limits, recognizing that ecosystems are not simple production factories but living systems built on complex relationships among species and physical factors such as water, temperature, and nutrient availability. Practices that respect and preserve how ecosystems function are the building blocks of what in the past five years has come to be known as an *ecosystem approach* to natural resource management—that is, management that centers itself around the sustainable and equitable use of ecosystems. In this chapter, when we refer to “better ecosystem management,” we mean adopting an ecosystem approach. (See *Figure 4.1*.)

In practice, “better ecosystem management” often translates to fairly simple principles, particularly in the context of the ecosystems that the poor use most frequently. For example, it may mean more moderate harvest levels of forest products, forage, or other vegetation, so that the ecosystem can retain its macrostructure, and so that watersheds maintain their ability to absorb rainwater and retain it as soil moisture. It may involve adopting different treatment of livestock, cultivation methods that reduce erosion, or cropping patterns that minimize depletion of soil nutrients. Where ecosystems have already degraded substantially, it may require a period of non-use and restoration, such as a closed fishing season or a logging or grazing ban. Or it may demand direct revegetation through tree-planting. In all cases, the effectiveness of such measures will be greater when they are actively supported by community members who see themselves as benefiting on a fair and equal basis in the short and medium terms. In this sense, an ecosystem approach is as much people-centered as it is ecosystem-focused.

Income Benefits of Better Management

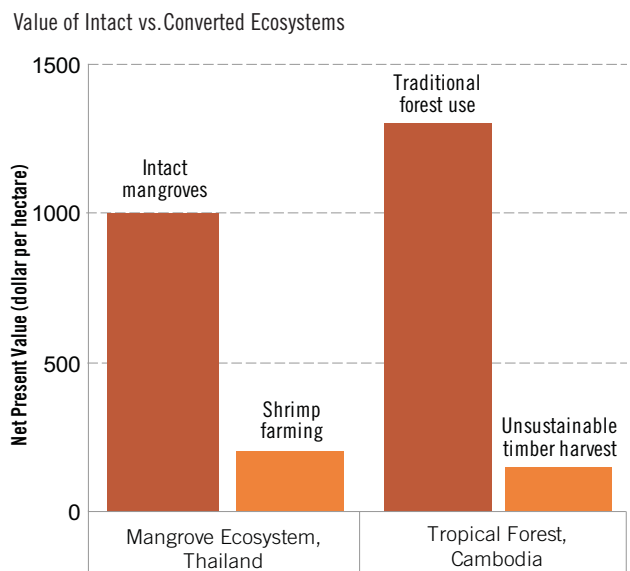
When rural farmers, forest users, and fishers adopt more sustainable practices, considerable income benefits can follow. A recent study of four low-income farming villages in arid western India illustrates the potential for higher agricultural income. All four villages had participated in government-supported projects from 1995 to 2001 to better manage their degraded watersheds—part of a nationwide program known as Watershed Development. They used a variety of water and soil conservation techniques, such as check dams and contour tilling, as well as tree planting to revegetate denuded slopes. The idea was to capture the occasional but intense monsoon rains, preserving them as soil moisture, rather than letting them run off and erode the soil (Reddy et al. 2004:303-306).

The success of these measures from an ecosystem standpoint showed clearly in the recovery of groundwater levels, with the water table in local wells rising an average of 25 percent in spite of several years of scant rainfall. From this increase in soil moisture flowed other benefits. The amount of land under irrigation increased. Grass forage increased as well in most villages, including forage on common property areas, which, prior to the watershed treatments, had been too degraded to produce useable fodder. Crop yields rose significantly, both on

FOUR STEPS TO GREATER ENVIRONMENTAL INCOME FOR THE RURAL POOR

- 1. Manage Ecosystems Better for Higher Productivity**
Improve the stewardship of ecosystems by adopting an ecosystem approach to management—recognizing the complexity of ecosystems and living within their limits. Good stewardship brings higher productivity, which is the foundation of a sustainable income stream.
- 2. Get the Governance Right to Insure Access to Environmental Income**
Confer legally recognized resource rights (such as individual or communal title, or binding co-management agreements). Where possible, decentralize ecosystem management to the local level (community-based natural resource management), while providing for regional or national coordination of local management plans. Empower the poor through access to information, participation, and justice. Create local institutions that represent their interests and accommodate their special needs.
- 3. Commercialize Ecosystem Goods and Services to Turn Resource Rights and Good Stewardship Into Income**
Improve the marketing and transport of nature-based goods produced by the poor. Make credit available for ecosystem-based enterprises. Capture greater value from the commodity chain. Partner with the private sector. Take care to keep successful commercial activities sustainable.
- 4. Tap New Sources of Environmental Income Such as “Payments for Environmental Services”**
Make the newly developing market of payments for environmental services more pro-poor by expanding the array of eligible activities and payment schemes. Look upon ecosystem income as a portfolio of many different income sources. Diversify this portfolio to reduce risk and enhance the bottom line.

FIGURE 4.1 MAINTAINING THE VALUE OF NATURE



Source: Millennium Ecosystem Assessment 2005b

irrigated and nonirrigated land: rice yields up 15-44 percent; peanut yields up 16-81 percent. Village land became more valuable too, because it was in better condition and had more agricultural potential (Reddy et al. 2004:308-312, 318).

With higher productivity, household incomes grew. Income from all sources—agriculture, livestock, and wage employment—increased from 50 to over 100 percent from their levels before the watershed rehabilitation. These increases, in turn, are reflected in higher spending on education and medical care. The benefits from adopting more sustainable watershed practices also extended beyond income. The availability of drinking water went up in all the surveyed villages and the time spent fetching water decreased—as much

as 80 percent in one village—a major benefit for women (Reddy et al. 2004:310, 313, 321). (See Figure 4.2.)

Likewise, indigenous communities in the Philippines' mountainous Kalinga province have revived traditional irrigation and forest-management techniques that protect local watersheds. Using a combination of reforestation, agroforestry plantings, environment-friendly irrigation, and fish production within active rice paddies, Kalinga families were able to greatly increase agricultural production and raise incomes. They have repaired over 90 traditional irrigation systems to sustainably supply their rice terraces, while on the watershed slopes individual families maintain and protect their own agroforest plantings. Between 1990 and 1996, the combination of watershed protection and good irrigation management raised annual incomes for over 1,000 poor families in seven indigenous communities by an average of 27 percent, all while maintaining over 80 percent of the original high-biodiversity forest cover (Southey 2004:1-2; UN Housing Rights Programme 2005:154).

Similar stories of income gains can be told for communities that have improved their management of local forest ecosystems, fisheries, or grasslands. In the Himalayan village of Waiga, villagers banned grazing and burning on the grasslands above the community in 1995, and planted 1500 alders. Over the next few years grassland recovery raised fodder production sevenfold—enough for all local livestock plus a surplus for sale—while the returning tree cover provided leaf litter for agriculture and stopped gully erosion in the steeply sloped terrain (Munsiari 2003:5, 15-19).

In Fiji, over 100 coastal villages have designated local *tabu* zones in nearshore waters where fishing and shellfish collection is banned to promote recovery of the marine life that forms a central element in local livelihoods and culture. Robust recovery in these local protected zones has spilled over into adjacent fishing areas, increasing the village marine harvest. In three villages where economic evaluations have been conducted, income from marine resources—typically half of all household income—increased 35-43 percent from 1997, when the *tabu* zones were established, to 2003. (For details, see Chapter 5 case study, “Village by Village: Recovering Fiji’s Coastal Fisheries.”)

In each of these instances, villagers have pursued more ecosystem-friendly practices because they visibly supported their resource-based livelihoods, boosting both their direct use of ecosystem goods and their cash incomes. These examples and many others clearly make the case that better ecosystem management pays off at both a household and a village level.

This is good news for rural economies in general. But how effective is this increase in environmental income at reducing village-level poverty? Unfortunately, evidence shows that the benefits of ecosystem improvements are often skewed toward higher income brackets. With more land, trees, cattle, or capital to invest in the increased farming potential of their recovered lands, the rich tend to capture more of the income bonus that healthier ecosystems provide (Reddy et al. 2004:318).

But poor families certainly do benefit also, for example by greater availability of wage employment, and greater ability to

PRINCIPLES OF AN ECOSYSTEM APPROACH

The goal of an ecosystem approach to natural resource management is to foster the sustainable use of ecosystems and the equitable distribution of their benefits. An ecosystem approach is successful if it preserves or increases the capacity of an ecosystem to produce the desired benefits in the future, and increases the capacity of society to fairly apportion benefits and costs.

Manage Within Natural Limits

Recognize the complex functioning of ecosystems and respect their biological thresholds. Conserve ecosystem structure in order to maintain ecosystem productivity.

Manage for the Long Term

Optimize ecosystem productivity—and benefits—over generations, not years. With care, managing for long-term productivity can be compatible with significant short-term gains.

Manage at Both the Micro and Macro Scales

Respect ecosystem processes at the micro level, but see them in the larger frame of landscapes. Decentralize management to the local level when possible. But recognize that ecosystems are interconnected and interactive, and exist on many scales. Local management efforts must be linked and harmonized at the larger scale so they do not work at cross-purposes.

Account for the True Value of Ecosystems

Include the full array of ecosystem goods and services when assigning economic value, not just the commodity value of extracted goods.

Make Trade-Offs Clear

Recognize that ecosystem management will involve trade-offs, since not every good or service can be maximized at the same time. Make trade-offs transparent so that costs can be shared equitably.

Involve All Stakeholders in Decisions

Be inclusive when making major management decisions, involving all stakeholders to foster equity and inspire active participation in the stewardship of ecosystems. Integrate social information with economic and environmental information in the decision-making process. Acknowledge that human modification of ecosystems is not incompatible with good stewardship.

meet their subsistence needs for firewood, fish, and the like. This provides a maintenance level of ecosystem support and greater income resilience for hard times. But it may not provide enough support to take a firm step out of poverty. For that, governance changes that free up access to ecosystems and promote information and market support to the poor are needed.

2 GETTING THE GOVERNANCE RIGHT: EMPOWERING THE POOR TO PROFIT FROM NATURE

As described in Chapter 3, lack of access—physical, political, and financial—is a critical roadblock to the ability of the poor to use ecosystems for poverty reduction. Bringing pro-poor governance to the management of ecosystems begins by removing this roadblock through improvements in tenure security, devolution of authority over nature to more local levels where the poor reside, and empowerment of the poor through information, participation, and the power of redress. The net effect of these actions is to secure the resource rights of the poor and give them the tools to exercise these rights responsibly and equitably.

Securing Property and Resource Rights Through Tenure Reform

Addressing the need for greater tenure security so that the poor can tap ecosystems and invest in their good stewardship is a top priority. It requires reform of the formal tenure regimes that currently make it hard for the poor to exercise property rights over land and resources. Interest in tenure reform has grown significantly in recent years as acceptance of the central role of tenure security in poverty reduction has spread. When well thought-out and appropriately implemented, tenure reform can produce considerable benefits for the poor. The most important is an acknowledgement by the state that traditional tenure



arrangements, including communal tenure, are legitimate and legally enforceable.

Recognition of Traditional Rights

Untitled, customary tenure remains the predominant form of tenure in many rural areas of the developing world. The persistence of untitled occupancy—the situation of many poor families who live on land they do not hold formal title to—is a common challenge for tenure-reform efforts. Experience shows that recog-

FIGURE 4.2 EFFECTS OF WATERSHED RESTORATION ON WATER AVAILABILITY AND TIME SPENT FETCHING DRINKING WATER

Village	Drinking Water Used (liters/household/day)			Time Spent Fetching Drinking Water (hours/household/day)		
	Before Restoration	After Restoration	% Change	Before Restoration	After Restoration	% Change
Mallapuram	10.5	11.9	13%	3.6	1.7	-53%
S. Rangapuram	10.7	12.8	20%	2.0	0.3	-83%
Tipraspalle	11.8	14.3	21%	1.2	1.2	0%
Mamidimada	12.2	14.3	17%	1.1	1.0	-10%

Source: Reddy et al. 2004

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BOX 4.1 NEGOTIATING INDIGENOUS TENURE RIGHTS IN BOLIVIA

IN THE LOWLANDS OF EASTERN BOLIVIA, LAND RIGHTS lie at the heart of a pioneering agreement to preserve both an indigenous people's way of life and a unique tract of dry tropical forest. The deal shows the importance and difficulty of negotiating land tenure amidst differing land uses and user groups.

The setting is the Gran Chaco, an isolated, biodiverse region where the pre-Hispanic Guaraní-Izoceño people have sustainably farmed and hunted the parched, inhospitable land for centuries. In recent decades large-scale cattle ranching and commercial soybean, sunflower, and cotton farming have encroached upon traditional indigenous territory, damaging the land through deforestation and soil degradation. Lacking tenure rights over the public lands they lived on and utilized, the Guaraní-Izoceño were unable to prevent these incursions.

Negotiations in the 1990s between Bolivia's government and the Capitanía del Alto y Bajo Izoceño (CABI), a grassroots indigenous organization representing the Guaraní-Izoceño, resulted in two landmark agreements. The first preserved 3.4 million hectares of uninhabited Gran Chaco forest and scrub as a national park, designated in 1995. The second will grant the Guaraní-Izoceño title to 1.5 million hectares of land adjacent to the park as a communally owned indigenous territory.

For the Guaraní-Izoceño, the outcome was a pragmatic compromise. On the one hand, they relinquished any ownership claim to the land encompassed by the Kaa-Iya del Gran Chaco National Park (KINP), now the world's largest protected area of dry tropical forest (Winer 2003:181). On the other, the 10,000-strong community, which lives in 23 villages scattered along the Parapet River, will own the sole right to exploit the land and forests of their titled territory—a major step towards safeguarding their livelihoods and future survival (CABI 2004:1-2).

The Guaraní-Izoceño also negotiated a major influence over the park. The KINP is now the only national park in the Americas co-administered by an indigenous organization and a national government. Moreover, the group won the right to pursue sustainable activities, such as ecotourism and fishing, in some park areas, while closing the entire area to new settlers (CABI 2004:1).

CABI's successful land rights campaign was pursued in partnership with the New York-based Wildlife Conservation Society (WCS), which was anxious to protect the Gran Chaco's abundant and often rare wildlife, including jaguars, Chacoan peccaries and guanacos, giant armadillos, pumas, and tapirs (Roach 2004:1). Backed by WCS expertise, CABI submitted a successful proposal for a co-managed national park in 1995. To ensure community buy-in, the park proposal was reviewed in community meetings. To

allay livelihood concerns, the border was determined in such a way as to minimize conflict—excluding from the park areas utilized by communities or occupied by third parties (Noss 2005).

In 1997, CABI presented a demand for a Tierra Comunitaria de Origen (TCO)—designated indigenous territory—under Bolivia's new agrarian reform law. The government approved the request, while retaining ownership rights to underground minerals and awarding water rights to the local municipal government. By April 2005, 300,000 hectares of land had been titled. When the process is complete, 1.5 million hectares of formerly public land will be owned by CABI, as the indigenous people's legal representative, with the remainder of the 1.9 million hectares in private, nonindigenous ownership (Noss 2005).

While the new land rights afforded the Guaraní-Izoceño are clearly conditional, they offer significant potential to boost food and livelihood security. A revitalization of traditional production systems is already underway, with women villagers experimenting with the production of mesquite flour and fish meal for sale in the Isono communities. Plant-based shampoo and honey are also being commercially developed for sale in Santa Cruz, the regional capital. These activities are managed by CABI's women's organization, CIMCI, whose goals are to empower women, promote traditional culture, improve food availability and nutrition and, ultimately, boost indigenous incomes (Winer 2001:13). CABI has also sought government permission for sustainable commercial trade in collared peccary and tegu lizard skins (Noss 2005).

According to a recent report on the land deals by an independent consultant, the TCO, by increasing livelihood security, will enable the Guaraní-Izoceño to “retain their identity as an indigenous tribe of lowland Bolivia while building stronger, and more equitable, economic links with the expanding market-driven economy of Santa Cruz” (Winer 2001:12).


The conditional nature of the tribe's land rights, however, is underlined by the presence of the 1,900-mile Bolivia-Brazil pipeline, which bisects both the Kaa-Iya National Park and the TCO. The pipeline was approved before either the park or indigenous territory were created, and the government retains rights to energy resources in the area (Roach 2004:12). As a consequence, Bolivia's government has granted further gas and oil exploration concessions in both the KINP and the indigenous territory, although energy companies would be required to work with CABI to mitigate their social and environmental impacts. A trust fund contributed by the existing pipeline companies, following an agreement with indigenous organizations, including CABI, made up 43 percent of the park's budget between 1998 and 2003 (Noss 2005). 

TABLE 4.1 RECENT LEGAL REFORMS STRENGTHENING COMMUNITY FOREST TENURE IN DEVELOPING COUNTRIES

Country	Year Enacted	Key Features of Reform
Bolivia	1996	Ancestral rights of community groups have precedence over forest concessions. Subsequent laws have strengthened community rights.
Brazil	1988	Constitution recognizes ancestral rights over land areas that indigenous groups and former slave communities traditionally occupied. Federal government is responsible for demarcating indigenous reserves on public lands and protecting land rights of indigenous groups.
Colombia	1991	Constitution of 1991 recognizes and outlines a framework for collective territorial rights for indigenous groups and Afro-Colombian traditional communities.
Indonesia	2000	New regulatory process has been recently established by which customary ownership can be recognized.
Mozambique	1997	Titles for customary rights are available.
Philippines	1997	Constitution of 1987 protects ancestral domain rights. Indigenous Peoples Rights Act of 1997 provides legal recognition of ancestral domain rights pursuant to indigenous concepts of ownership.
Tanzania	1999	Customary tenure is given statutory protection whether registered or not. Titles for customary rights are available.
Uganda	2000	2000 draft law currently under revisions. Government is embarking on an ambitious program of devolution to district and local councils.

Source: White and Martin 2002; used with permission, copyright Forest-Trends 2002

nizing and integrating such customary tenure into formal state tenure regimes is a key feature of successful reform. This may require greater flexibility about what is considered legitimate proof of “ownership” so that oral as well as written records of occupation or access to communal lands are accepted. (See Table 4.1.)

In Mozambique, Tanzania, and Uganda, new tenure laws simply recognize land held under customary tenure as fully legally tenured “as is.” This includes using certification processes based on verbal endorsements (Mozambique), as well as using community-administered land recording and titling processes (Tanzania). In Eritrea, customary tenure has been recognized in the form of lifetime-use agreements, although they cannot be passed down to family members (Alden Wily and Mbaya 2001:15-18).

Other countries are slowly bridging between communal tenure and more individualized land rights. (See Box 4.1.) The key is that new individualized rights must be compatible with customary practices, so that they do not create or perpetuate a parallel tenure system that can give rise to conflicting claims later on. Simple and unambiguous procedures for recording land sales and transfers can also help avoid tenure disputes as customary systems interface with modern land markets and land uses (Deininger 2003:52-54).

Traditional rights to resources also extend beyond land rights per se into water rights, the use of fisheries, and pastoral rights. These too can be made more secure through formal recognition and delineation by the state. For example, the government of Fiji formally recognizes “customary fishing rights areas” where villagers have traditionally fished and

collected shellfish. These nearshore zones, known locally as *qoliqolis*, have been surveyed and accurately mapped, with the records maintained by the nation’s Native Fisheries Commission. Based on these designations, the state Fisheries Department has begun granting local communities the right to draw up their own management plans for *qoliqolis* with the aim of restoring these fisheries as a community asset.

It is important to recognize that increasing security of tenure for the poor does not always require gaining full title or private ownership of land or resources (Deininger 2003:39). In the case of common-property resources like state forests or fisheries, increased tenure security often takes the form of the legally sanctioned use of these resources, including the right to exclude others and manage the resource for optimum benefit. As in the Fiji example above, the key to increased security is that the physical extent of the land or resource, the exact limits of the use, the permissible forms of management, and the limits on the state’s ability to modify or terminate the arrangement are specified and agreed to in a legally binding agreement. This kind of unambiguous and enforceable use-right is often a central feature of successful community-based natural resource management projects meant to extend ecosystem access to the poor.

Reduced Transaction Costs and Other Benefits

High transaction costs—the costs of doing business, both in money and time—have traditionally been an important obstacle to the poor in acquiring or disposing of land. Effective legal and land information systems typically form the core of successful tenure reform, thereby lowering property transaction

costs, whether these be sales or leases of resources and use rights. This can help the poor access and manage land and resources as more flexible assets.

Other benefits can come from successful tenure reform as well. One is a decentralization of the bureaucracy that administers tenure and resolves resource and land disputes. When the government machinery for administering tenure rights moves closer to the small rural landowner, it increases the landowner's access to land registration and taxing authorities, as well as legal proceedings involving land disputes. Decentralization of tenure administration has been particularly dramatic in Tanzania and Uganda, with community-based mechanisms for resolving property rights-related disputes appearing in these countries, as well as Mozambique (Alden Wily and Mbaya 2001:14-18, 46).

Improved security of tenure has also, in many instances, fueled the development of more dynamic land markets in poorer communities. In such cases, poorer households can benefit through greater access to productive land if they have sufficient access to capital. Evidence from Mexico, for example, indicates that policy reforms of the early 1990s that opened up both land and credit markets enhanced access to land among poorer households with adequate access to capital, but not poorer families in general (Carter 2003:52).

Higher Rural Incomes

Greater security of tenure, especially when coupled with access to credit, can help poor farmers in developing countries invest more in their land, thereby improving agricultural productivity and raising farm income. In Thailand, evaluation of a 20-year initiative begun in 1987 to provide the country's rural populations with access to modern land registration and credit institutions revealed that midway through the effort, rural incomes, major investments, and use of formal credit is much higher among farmers with titled land than for those yet to be included in the program (Riddell 2000:10). In China, experimental land policy reforms granting clear ownership rights to village-based cooperatives for communal management of mountainous forest lands enabled villagers in Jiangsu and other provinces to create large, successful orchards (Bruce et al. 1995). In general, successful tenure reform creates both the perception of greater security and the reality of more enforceable rights—both important elements in the willingness and ability of the poor to invest their time and resources in expanding their environmental income. (See Figure 4.3.)

The Dangers of Ineffective Tenure Reform

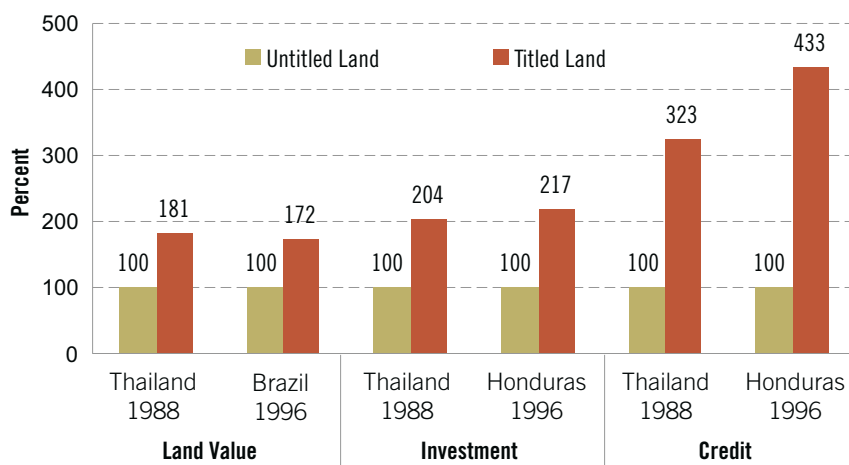
Reforming something as central to wealth creation as a nation's tenure system is by no means easy. Even though modern tenure-reform efforts rarely attempt major land redistribution, they are still politically perilous, with vested interests often reluctant to change the status quo. Unfortunately, when changes to tenure systems are incomplete or poorly executed, the poor can end up worse off rather than better. Therefore, in designing tenure reforms, policymakers must be careful to avoid the following:

- **Failure to recognize important land uses and users.**

Poorly designed attempts to increase security of tenure for some can end up reducing the security of others. For example, land titling and registration projects may overlook rights to important land uses, such as the right to gather non-timber forest products or to obtain water. These uses are most often exercised by women and the poor. If these rights are not legally recognized as part of the land registration process, they may be effectively destroyed (FAO 2002a:20).

- **Land grabs by urban elites.** In some instances, city-based government and business elites have made dramatic attempts at land grabbing through the process of shifting land out of customary tenure systems and into statutory tenure systems. This can take the form of government-granted concessions on indigenously held land over which the state claims ownership. Or it may simply be land purchases by the elite from those who hold land under customary tenure arrangements. Some countries, such as Cameroon, have initiated policies that appear to encourage land speculation, favoring privileged individuals with access to knowledge, influence, and money (Elbow et al. 1998:5).

FIGURE 4.3 EFFECT OF LAND TITLING ON LAND VALUE, INVESTMENT, AND CREDIT



Source: Deininger 2003



- **Exclusion of women.** Women make up the majority of the world's agricultural producers, but they are usually the last to be included in land and tenure reform efforts. Traditionally, women in Africa and other parts of the developing world have only had access to land tenure through their husbands, fathers, or other male relatives. Registration of land in the name of male relatives precludes women from obtaining property rights at a time when women's access to land for cultivation is becoming increasingly important for AIDS widows and other female heads of households (Carter 2003:49).
- **Inadequate procedures for documenting communal rights.** The lack of appropriate procedures for expeditious, cost-effective documentation of untitled communal property rights can compromise the effectiveness of tenure reform. For instance, the government of Bolivia enacted legislation recognizing indigenous land rights in 1996; because of complicated and costly documentation procedures, however, by 1999 only 10 percent of eligible territories had received titles (White and Martin 2002:16).
- **Conditionality and other constraints to land markets.** Many new tenure laws do nothing to remove constraints and limitations that have long hampered land markets in developing countries. For example, none of the recent spate of African tenure legislation removes long-standing requirements to occupy and use agricultural land in order to maintain tenure (Alden Wily and Mbaya 2001:14). Agricultural use may not

always be the best use of ecosystems, either economically or ecologically. For example, conversion to wildlife habitat may be a better use of some lands with high tourist potential, or conversion to other commercial purposes. Flexibility in land use may increase the value of the land assets of the poor, while conditions on use reduce the economic potential of the land.

Poor-Friendly Decentralization: Community-Based Natural Resource Management

Improving the tenure security of the poor and their ability to exercise property rights is only one step in the legal, economic, and political empowerment of poor families. A second important step is devolving management authority over ecosystems to local institutions that are more accessible to the poor.

As detailed in Chapter 3, decentralization that actually works for the poor is more the exception than the rule. It requires, at a minimum, that local institutions—whether they be official government institutions like village councils or informal institutions such as user groups, cooperatives, or watershed committees—are formed on democratic principles of representation, meaning that they are accountable to their low-income constituents. But this alone is not usually enough to overcome the structural bias against the poor in local institutions. Special efforts to include the poor are generally required. These can range from reserving gender-based or income-based slots in local institutions to insure participation; arranging for special outreach

and training for members of these institutions; creating rules to insure equitable distribution of local benefits to low-income households; and using participatory rural appraisals and other survey techniques to help local institutions catalogue and quantify community needs and the potential trade-offs for any set of management actions. Of course, this is all predicated on the assumption that the state has granted these local institutions some actual authority over local resources—something that is still far from common.

Pro-Poor Decentralization: An Example

When these minimum requirements come together—true devolution of authority, local accountability, and an effort to acknowledge the special needs of the poor—the outlines of local empowerment can begin to take shape. Uganda provides an instructive example of democratic decentralization that is both ecosystem-friendly and serves the interests of the nation's low-income fishers. Until the late 1990s, management of fishing in Lake Victoria, Lake Albert, and other inland lakes was the province entirely of the central government. A government push for decentralization and the creation of new fishery rules led to the formation in 2003 of Beach Management Units (BMUs)—local institutions charged with regulating fishing along specific stretches of the lake and shore. Each BMU is headed by a

committee with 9 to 15 democratically elected members from each of four different stakeholder groups: 30 percent boat owners, 30 percent fishing crew members, 10 percent fish mongers, and 30 percent other stakeholders. In this way wage laborers, merchants, and other low-income families associated with local fishing can participate in the committee along with wealthier boat owners. To address gender disparities, BMUs are encouraged to have women make up 30 percent of the committee “whenever possible” (Waldman et al. 2005:65-68).

The duties of the BMUs cover the daily management of the local fishery: issuing fishing permits and limiting the size of the fishing fleet, registering fishing gear, and working with the government Fisheries Department to enforce regulations against illegal fishing practices. The BMUs also collect fishing data to help guide their management decisions. The local committees are allowed to keep 25 percent of money generated from licenses and landing fees to fund their operations (Waldman et al. 2005:65-68).

Results of the decentralization have been encouraging so far. The BMUs report better control over illegal fishing and improved working relations with central government authorities. The fishing statistics that BMUs have collected have brought greater local awareness to the need to reduce fishing pressure and fish more sustainably. On Lake Albert, BMUs have declared



three non-fishing zones designed to protect known nursery areas and thus maintain the fish stock. The committees report voluntary reductions in the use of illegal fishing gears, indicating a change in attitudes of the fishing community. It is too early to tell if these improvements in management have translated into more income for local fishers, but anecdotal reports of better daily catches are starting to come in. Women are also beginning to change their role. Local culture discourages women from joining fishing crews, but some women have started fishing from the shore; a few women have even become boat owners, hiring men to crew their boats (Waldman et al. 2005:65-68).

The Benefits of CBNRM

Uganda's Beach Management Units are just one example of the broad potential for community-based natural resource management (CBNRM)—one of the most progressive and potentially poor-friendly manifestations of decentralization. This kind of devolution of management authority over state-owned resources has the potential to be both inclusive enough to involve the poor and effective enough to generate increases in environmental income. Well-functioning community management arrangements have shown benefits in all three of the key areas highlighted in this chapter: household income, local empowerment, and ecosystem condition (Shyamsundar et al. 2004:7-13).

Income Benefits

Income benefits come from a variety of sources, including greater access to wage employment as well as to local subsistence goods like bushmeat and forest products (Shyamsundar et al. 2004:9). For example, community forestry arrangements often give rise to forest-related enterprises that can provide substantial local employment; revenue-sharing with the government from timber sales and the like; and greater control over sources of woodfuel and other forest goods in daily use. The same is true of devolving wildlife management to local communities. When the Namibian government in the late 1990s transferred to rural communities the authority to manage wildlife in certain demarcated zones called conservancies, it included the right to regulate the substantial tourist trade in these zones and the right to harvest a modicum of bushmeat as well. Conservancy-related activities have created some 3800 jobs that did not exist before the decentralization took place; entrance fees and trophy-hunting fees have generated public funds for schools and other public investments, and even for cash payouts to conservancy members. Local incomes have risen substantially as a result. (*See the Chapter 5 case study, "Nature in Local Hands: The Case for Namibia's Conservancies."*)

Local Empowerment

Some of the most significant benefits of community management are in the area of empowerment. Shifting substantial management control over ecosystems to communities gives them a voice where often they had none. It often restores traditional rights—such as water use rights, forest collection rights, or fishing rights—that may have been lost as modern states central-

ized their authority. While these political and legal benefits are enormous, the shift in resource control also exerts a substantial psychological effect on communities that may be even more important, particularly for the poor. This manifests as a new sense of pride and control over one's life, as well as greater confidence in dealing with others outside the community and with government authorities. This empowerment dividend is often augmented as local community members gradually develop the accounting, monitoring, planning, and dispute-resolution skills that good resource management demands (Shyamsundar et al. 2004:11). The benefits of such new personal and group skills spill over into domains well beyond resource management.

Ecosystem Benefits

There is also evidence that community-based resource management can create incentives that foster good ecosystem management and contribute to conservation goals as well as economic development. Experiences in Africa, India, and Nepal demonstrate that community forestry management can result in healthier forests and improved tree cover (Shyamsundar et al. 2004:13). A notable example is the HASHI program in the Shinyanga district of Tanzania. With help from the central government, over 800 villages have revived a traditional conservation practice of creating "enclosures" that foster regrowth of the once-abundant forest by controlling grazing and harvesting within the enclosed area.

Management decisions about the enclosures are entirely a local matter controlled by village councils. So far, creating traditional enclosures through the HASHI program has reforested some 350,000 hectares of overgrazed and barren land. Economic benefits distributed to villagers—in the form of fodder, fuel wood, medicinal plants, and greater water availability—have made the HASHI program a popular success. The combination of income and ecosystem benefits made the HASHI program a finalist for the UN's Equator Prize in 2002, recognizing it as prime example of the conjunction of poverty reduction and conservation. (*See the Chapter 5 case study, "Regenerating Woodlands: Tanzania's HASHI Project."*)

Similar ecosystem improvements have also been documented in cases where wildlife management has been devolved to the local level. Wildlife censuses associated with the Selous Conservation Program in Tanzania showed increased animal numbers, and wildlife populations have rebounded impressively in Namibia's conservancy areas as poaching has fallen and conflicts with livestock have been reduced (Shyamsundar et al. 2004:12).

Keeping Community-Based Management Pro-Poor

These successes show the potential for community-based management to empower and enrich local communities and still manage ecosystems well. But CBNRM is no panacea, and

it is by no means always pro-poor. Both the power and benefits associated with community management tend to be directed toward higher income classes unless specific accommodations are made. In pursuing pro-poor CBNRM, communities, governments, and NGOs must keep in mind several points:

Accounting for the Costs of CBNRM

Community management of ecosystems sometimes entails substantial costs that must be accounted for and minimized. One of the major costs of many community-management schemes is the short-term loss of the use of a resource to allow it to recover or to keep its use within sustainable levels (Shyamsundar et al. 2004:10). This “opportunity cost” may manifest as a restriction in the use of common areas for grazing or firewood collection, or a limit on how many game animals or fish can be harvested—restrictions that inevitably fall hardest on the poor. The loss is usually temporary—a typical grazing ban to restore a denuded watershed slope might last for three years. In addition, if the ban is successful, the long-term benefit from the closure will soon exceed the short-term costs. Nonetheless, the short-term costs can impact poor families considerably in the interim and are a frequent source of dissatisfaction (Kerr 2002a:1397).

For example, in a study of villages participating in watershed restoration projects in western India (part of India’s Watershed Development program), nearly a fifth of the landless residents reported that the restoration projects harmed their interests because they could not graze their sheep on the commons due to grazing bans (Kerr 2002a:1396). Women too complained of their loss of access to common lands, which they used to collect grasses for brooms, tamarind pods, and tendu leaves—some of the few income sources that they controlled independent of their husbands (Kerr 2002a:1395-97).

This and other studies show that without a mechanism to compensate the poor for their short-term losses, achieving good ecosystem management and maximum benefit to the poor may be antagonistic goals, at least in the initial stages of ecosystem recovery. Offering wage labor to try to offset the income loss is one common way to avoid this trade-off. For example, watershed restoration may require seasonal labor for several years to build check dams, plant trees, install fencing, create ponds, or recontour croplands to retain water. However, this will only provide adequate support if the poor are hired preferentially for such jobs and the labor persists for as long as their access to resources is restricted. In the study of watershed restoration in western India, for example, wage labor, while helpful, was not sufficient to make up for loss of access to grazing on common lands (Kerr 2002a:1388, 1395-1396; Shyamsundar et al. 2004:17-18).

Other approaches to reducing short-term costs or providing compensation may also be useful. Staging the restoration of common areas so that they are not all closed at once, but in rotation, is one strategy to reduce the burden on the poor. Another approach is to provide extra services specifically to poor families, such as training in skills that open other employment

options, or establishing credit or savings groups to help them manage household resources better and make investments in land (Kerr 2002a:1391-92).

Assuring Equity in Benefits Sharing

As has been stressed above, richer families in a rural community usually hold a structural advantage in capturing the benefits from good ecosystem management. For example, watershed restoration in arid climates will clearly advantage those with more land, especially if these are low-lying lands where the groundwater captured by the restoration is likely to accumulate most. Likewise, owners of large boats with more efficient gear will be able to harvest more of a healthy fish stock than the poorest fishers paddling small *piroques*. Even when local resource management projects try to make poverty reduction a goal, this natural advantage often intervenes (Kerr 2002a:1388-9, 1398; Kumar 2002:763).

Given the structural advantages of the rich, developing mechanisms to share benefits and costs equitably among all community members must be a priority when communities begin local management of common resources. But finding acceptable recipes for benefit-sharing is notoriously difficult. Successful attempts often require analyzing the benefits carefully so that they can be apportioned not just on the basis of the quantity of water, fish, or forest products produced, but on the economic value of these benefits.

The village of Sukhomajri in the Indian state of Haryana offers one famous example of the successful sharing of benefits. Watershed restoration there in the 1970s produced the same benefits seen in other successful restoration projects: revegetated upper slopes produced more fodder and more surface water in low-lying areas that could be used for irrigation and other income-producing activities.

The innovation came in giving each family an equal share of the water that collected in the village’s new catchment ponds, with the option to use it or sell it to others if they wished. Landless families could thus sell their water to farmers with greater need for irrigation, turning their share to cash, as well as benefiting from wage labor that might result from more irrigated crops. Each family also received equal shares of the watershed’s valuable *bhabhar* grass, which they could similarly use or sell. This arrangement resulted in considerable increases in household income throughout the community. By 1998, 70 percent of village households were earning Rs 2000 per month (US\$47) (Agarwal and Narain 1999:14-17; Kerr 2002a:1390; Kerr 2002b:56).

Unfortunately, there is no easy formula for benefit-sharing arrangements, which are highly specific to both the resources being managed and the social structure of the community. In some instances, the resource is highly divisible and marketable, such as the harvest of high-priced medicinals, and sharing may be straightforward. Or community benefits may come in the form of access fees from tourists, timber revenues, or other income that can be split among community members. In



Namibian conservancies, for example, revenues from tourist access, campgrounds, and the sale of game hunting licenses to foreigners generate income that in some instances has been turned into a cash payout to each conservancy household—an easy way to assure equal treatment (US AID 2004:13).

But in other instances, easy division may be impossible. For example, in many restored watersheds the increase in water will not result in accumulation of surface water in ponds where shares can be calculated. Instead, extra water may manifest as more groundwater, which is legally the property of the land owner from whose well it is pumped to the surface. This makes the community benefit difficult to calculate and hard to tap by poor families without land or wells. Addressing this would require an arrangement where groundwater is considered community property no matter where it is pumped, with users paying a fee to the community to tap it (Kerr 2002a:1391-1392, 1399).

Another approach to community equity is to grant special arrangements just to the lowest income families. For example, one Indian village in Maharashtra state granted to the village's landless residents exclusive fishing rights in a run-off pond that the community had built (Kerr 2002a:1391-1392, 1399). Likewise, low-income families could be allowed special areas to fish, extra harvest or grazing periods, or an extra share of the resource being managed. In all cases, this requires a progressive view of benefits and a careful definition of user rights that is formalized and accepted by the community.

Acknowledging the Limits of Participation

There is a growing consensus that communities can establish functioning institutions capable of managing local resources,

and that these institutions—from village councils to user groups—can function through community participation, making real the promise of local devolution. But there is also the realization that community processes are rarely egalitarian. Except in rare instances, communities are not homogeneous, and naturally break into various interest groups, making equity a challenge. Often, these are based along class, ethnic, and gender lines, with women and the poor usually being the least powerful of these groups (Kellert et al. 2000:705; Shyamsundar et al. 2004:16-17, 19; Kerr 2002a:1388-1389; Kumar 2002:765-766).

A scene several years ago from a village meeting about a new watershed restoration project in the Indian state of Karnataka illustrates the problem. At the front of the room sat the wealthiest landholders, who owned fertile, irrigated land in the valley bottom. Behind them sat middle-income farmers with less-desirable but still good land. In the back stood poor families with the least fertile land at the top of the watershed. The landless hung around the periphery; no women were present (Fernandez 2003:6-7).

In situations such as these, assuring true participation for the poor requires considerable institution-building so that mechanisms of inclusion can gradually work against ingrained social patterns. For example, one NGO in Maharashtra state that helps villages undertake watershed restoration programs insists on a consensus-based approach to all decisions about the watershed and spends a good deal of time facilitating such decisions and building the social basis necessary to foster them (Kerr et al. 2002:16, 34). Although it is more unwieldy than a majority vote, this approach offers an organic way to make sure the interests of the landless minority are not simply swept aside.

Another method that has proven effective in some situations is to encourage the poor to form a separate affinity group or self-help group—such as a credit or savings association—where they can discuss common concerns, develop skills such as bookkeeping and management of common funds, and come to common negotiating positions. One or more members of such self-help groups can then act as an official representative on the watershed committee or other local authority charged with managing the natural resource in question, insuring that the poor have an official voice and at least a modicum of representation. In Karnataka, such arrangements have, for example, resulted in better recognition of the need to provide forage to the landless during the watershed regeneration process (Fernandez 2003:5-10).

Often, these self-help and affinity groups have a high proportion of women. This points up the fact that achieving real participation of the poor inevitably means making special efforts to bring women, who head up many of the poorest households, into a greater decision-making role. Overcoming gender bias is particularly important in natural resource management because of the role women play in generating environmental income and their place in managing the household economy. They are usually the front-line users of natural resources on a day-to-day basis.

Unfortunately, there is abundant evidence that even when women are given places on village committees, they often are treated as tokens rather than full members, with their voices being lost among the male majority or their votes simply a proxy for their husbands' opinions. Techniques to increase the influence of women include requiring parity—or close to it—of representation on such committees, as well as deliberate scheduling of meetings to accommodate women's domestic and child-care responsibilities. Including women in technical training about managing the resource in question is also important to insure parity in skill levels and reinforce the idea of women as co-managers rather than dependents (Kerr 2002a:1398).

Nongovernmental organizations are frequently essential partners in helping communities devise decision-making processes that include the poor. Local NGOs often provide both technical help with the task of resource management, but also capacity-building in group dynamics and conflict resolution, as well as administrative capabilities such as bookkeeping, budgeting, keeping records, filing reports, and interacting with government officials. In Karnataka, the NGO MYRADA provides a series of 14 training modules for the use of local self-help groups covering topics such as crafting a common vision, developing internal rules and regulations, resolving conflicts, and maintaining proper books (Fernandez 2003:6). As with MYRADA, the involvement of local NGOs can be the catalyst for innovations in local governance that help the community reach beyond its traditional social hierarchy to recognize the need for greater equity in benefits-sharing (Kerr 2002a:1390-1392). Such groups can also bring isolated rural

communities into contact with networks of similar communities to share experiences, as well as with a wider global community of ideas and funding that may offer new resources and partnerships (WRI et al. 2003:71-88).

While communities can look to civil-society groups for new approaches to local governance, they often need to revisit traditional community institutions as well. Customary sources of authority such as chiefs or village elders are frequently key players in helping communities to organize around the goal of local management. In many cases, community action could not proceed without at least the tacit blessing of the traditional leaders.

In some instances, these traditional institutions have acted in parallel with democratic institutions such as village councils, creating a synergy between new and old that has been key to the success of the management effort. In Fiji, it was the encouragement of the local district chief that led to the first experimentation with community management of a local fishery and the establishment of the no-fishing zone that helped rejuvenate it. In Tanzania's HASHI project, protected forest enclosures are officially managed by the local village councils, but the councils are guided by the villages' customary Council of Elders and informed by traditional village assemblies called *Dagashida*.

While traditional institutions generally engender the community's respect and buy-in to local management regimes, they can also be obstacles to equity and equal participation if they simply reinforce entrenched power arrangements or provide a route for powerful families to monopolize the benefits stream (Shyamsundar et al. 2004:7).

A Continuing Role for the State

The goal of devolving control over natural resource management from the national level to the local level is to give local residents a stake in management, thus increasing its effectiveness and equity. But the state still plays an essential role in helping such local management to succeed. For example, it is the state that must put in place the policy and legal framework to allow local management to take place at all. In addition, the state has a special responsibility to look beyond the level of community management to make sure that broader environmental standards are upheld and management efforts are coordinated. The state can also help local management to become a source of substantial income through training and capacity building, as well as deploying its more traditional economic development tools of transport, marketing, and credit assistance. More specifically, the state has an important role in eight areas:

1. Defining the legal space for local management.

Without official state recognition, local management regimes can never be secure. This usually requires altering the framework of national laws that define the state's role in resource

ownership and management. Many nations have made significant progress in crafting new forestry, wildlife, and fishery laws that specifically sanction local management regimes. In South Africa, for example, the 1998 Marine Living Resources Act included a provision recognizing the legitimacy of managing local fisheries for subsistence use (WRI et al. 2003:180). In Africa alone, more than 30 countries have passed new forest laws since 1990 that mandate varying levels of decentralization and new opportunities for local participation in management (Shyamsundar et al. 2004:20). However, interpreting these laws and establishing the limits of local management authority are ongoing challenges that demand continued state attention and experimentation. This includes not only the details about technical management itself, but also such institutional questions as the structure of local management committees. The state, for instance, may play a progressive role by encouraging gender balance on such committees.

2. Granting resource tenure. As stated earlier, tenure is a central requirement for real access and control of resources. As it defines the parameters of local control, perhaps the state’s most important contribution is to clearly establish the resource rights of communities in a legally unambiguous manner. This allows communities to make firm management plans and financial commitments without fear of disenfranchisement. It gives them the legal basis to seek redress through the courts if they feel their resource rights have been violated. This access to redress is essential to the exercise of true authority, and lack of this right is a frequent bugaboo of local management efforts.

3. Requiring community consent. One way that the state can safeguard local community management rights is to insist on a requirement of free, prior, and informed consent (FPIC) by the community whenever large-scale economic projects like mining, energy extraction, or major timber harvests are proposed nearby. Planning for such projects often excludes effective community participation and conflicts with local priorities. FPIC is both a principle and a process that some governments and international institutions are beginning to incorporate into their policies. As a principle, FPIC is the right of local communities and indigenous peoples to participate meaningfully, through consent procedures, in decisions about how the land they occupy and the natural resources they depend on are to be utilized. As a process, FPIC enables rural communities—who are often politically weak—to present their concerns to those proposing large-scale projects, whether they are from the government or the private sector. Its intent is to promote equal bargaining power among all parties and shield communities from coercion, threat, or manipulation. Without this shield, experience shows that poor communities often lose control of local resources. (See Box 3.3.)

CO-MANAGEMENT EXPERIENCES IN SAMOA

In 1995 the Fisheries Division of Samoa developed a co-management policy for the nation’s small-scale coastal fisheries. It began to work with fishing communities to develop Village Fisheries Management Plans, providing villages with any technical assistance they needed to develop the plans. Provided the rules proposed in the management plans were consistent with national law, the government would help the communities make them legally binding by issuing them as by-laws. Once approved, the by-laws were disseminated via radio.

Within the first two years of implementing the co-management policy, the Fisheries Division had helped 44 communities adopt Fisheries Management Plans. These plans all contained elements of sound ecosystem management. For example, all of the plans banned the use of dynamite (a destructive fishing practice), 86 percent established local marine protected areas, and 75 percent set mesh size limits on fishing nets to reduce the accidental capture of juvenile fish. The government implemented the program gradually, providing extension services to roughly 10 new villages per year. Extension officers would first meet with the community; if it was interested, the officers would convene a community assembly to negotiate the co-management arrangement, including the various duties and obligations of the state and the community. Satisfaction with the program was generally high. An internal review in 2000 found that 86 percent of the villages were implementing management plans at or above average competency (King and Fa’asili 1999:138-140; World Bank 2004:42)

COMMUNITY-BASED FISHERY MANAGEMENT IN SAMOA

Management Technique	% of Villages Adopting
Banning the use of chemicals and dynamite to kill fish	100
Banning the use of traditional plant-derived fish poisons	100
Establishing small protected areas in which fishing is banned	86
Enforcement of limits on the size of mesh nets	75
Banning the dumping of rubbish in lagoon waters	71
Placing controls or limits on the number of fish fences or traps	<10
Offering prayers for the safe-keeping of the marine environment	<10

Source: King and Fa’asili 1999; FAO 2002b

4. Creating local-state co-management partnerships.

In many cases, local management is best pursued as a partnership between the community and the state. Co-management regimes, as these partnerships are called, allow the state to contribute its expertise in some areas while devolving substantial control over most day-to-day management. Co-management regimes have become common in fisheries, where communities may not have the capability to take on some essential tasks such as fisheries research and stock assessment, or to manage an entire fishery. But they are

BOX 4.2 FAIR TRADE CERTIFICATION: RURAL PRODUCERS MEET THE WORLD

A COFFEE DRINKER IN SAN FRANCISCO has little chance of ever meeting the small-scale farmer in Nicaragua who may have raised the original coffee beans. But if the coffee drinker has bought “Fair Trade” beans, he or she has made a conscious effort to support the coffee producer with a fair wage. Goods that are certified as “Fair Trade” are priced a little higher than the market rate, with the premium routed to the small rural producer in the form of a slightly higher profit. The Fair Trade concept aims to bring small farmers a fair price for their products and to support sustainable and socially responsible production methods (FLO 2004:3-8). Fair Trade is thus one of the more benign faces of globalization, with the potential to connect poor rural producers with global markets.

Besides coffee, Fair Trade items include tea, cocoa, sugar, honey, bananas, fresh fruit and vegetables, dried fruit, fruit juices, rice, wine, nuts and oilseeds, cut flowers, ornamental plants, cotton, and a variety of handmade crafts—but coffee remains the core of the Fair Trade system (FLO 2005; Young 2003:6). Fair Trade certification—where producer cooperatives commit to a series of labor and environmental practices and social equity goals—began in 1988, when Mexican and Dutch trading partners launched the Max Havelaar Fair Trade certification, sponsored by the Max Havelaar Foundation in the Netherlands. In 1997, the growing family of Fair Trade organizations formed an umbrella organization, Fairtrade Labeling Organizations International (FLO), which standardized labeling and certification procedures. In 2004 there were some 400 organizations and more than 800,000 producers certified under the FLO umbrella (FLO 2005).

Fair Trade producers can earn more than double the conventional market price for their beans. The 2004 price for Fair Trade Robusta coffee was set by the FLO at a minimum of US\$1.01 per pound, with an additional \$0.15 premium for organic coffee. This compares to prices on the conventional market that averaged US\$0.40 per pound (FLO 2004:11; Bacon 2005:505). This can translate into a significant income boost for farmers. In Chiapas, Mexico, farmers in one coffee cooperative have reported 100-200 percent growth in income in recent years due to Fair Trade sales (Taylor 2002:19-23).

Direct gains in income are critical for small farmers, but some of the less visible benefits of Fair Trade can be even more important for producers in the long term. Members of the La Selva cooperative in Chiapas, Mexico, cite the importance of the “apprenticeship in commercialization” they have gained from working directly with buyers and learning about potential markets (Murray et al. 2003:12). Other important benefits

include greater access to credit, broader networks of contacts, and technical training and information exchanges that help farmers produce higher-quality coffee (Taylor et al. 2002:20).

Finally, Fair Trade and shade-grown coffee can significantly reduce the vulnerability of small farmers, impacting livelihood security in ways that are often overlooked. A typical shade coffee farm consists of a mixed plantation that can produce fruit, firewood, timber, and other products in addition to coffee. This allows families to be less dependent upon a single crop, and provides resources that can be used directly or sold for cash. Studies in Guatemala and Peru suggest that these non-coffee products can provide as much as 25 percent of the total value earned on a small farm (Rice 2001 in Valencia 2001:2). Fair Trade cooperatives also offer a set price for a crop—this gives farmers the ability to plan ahead, a rare luxury (Murray et al. 2003:7). A survey of Nicaraguan farmers found that farmers participating in Fair Trade and other alternative markets were four times less likely to feel at risk of losing their land due to low coffee prices (Bacon 2005:506).

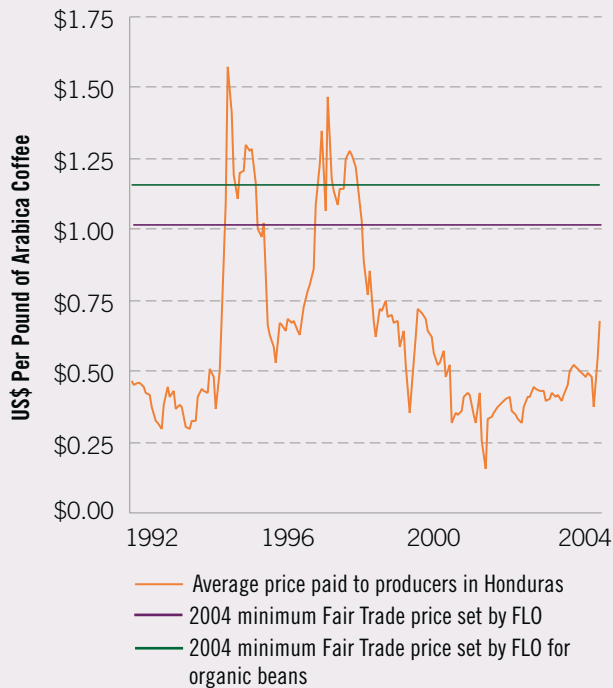
Fair Trade coffee production also has important environmental benefits. While Fair Trade cooperatives do not require their members to raise shade-grown coffee, they encourage it along with organic production methods. Most training and financing are linked to sustainable production methods, and organic coffee can earn an additional price premium (Taylor 2002:3-4).

The Samyukta Vikas Cooperative: A Fair-Trade Success

While coffee is the focus of much Fair Trade commerce, villagers near Darjeeling, India, have concentrated on tea. Residents of three remote hill villages located on a former tea plantation are now successfully exporting organic Darjeeling tea to U.S. consumers. The new tea enterprise has helped the villages of Harsing, Yankhoo, and Dabaipani become economically self-sufficient. Tea income has allowed residents to construct a community drinking water supply, and the villagers are developing plans to add ginger, cardamom, and oranges to their organic exports.

Life for the villages' 483 families, all of Nepali descent, has improved significantly in just eight short years. Since the tea estate they inhabit was abandoned in 1952, the isolated communities had survived on subsistence farming, cultivating maize, millet, and vegetables, and keeping a few cattle, goats, and chickens—almost all for domestic consumption. Most

THE BENEFITS OF FAIR TRADE TO COFFEE FARMERS IN HONDURAS



Source: FLO 2004, ICO 2005

families had small landholdings averaging 1.5 acres. Their soil's high acidity, the result of intensive tea cultivation, led to very low productivity. Local deforestation had also contributed to soil erosion, landslides, and the loss of forest products (RCDC 1996:5-7).

Most families lived a precarious existence, surviving on less than 12,000 rupees per year (US\$275). A 1996 survey by a local development NGO, the Darjeeling Ladenla Road Perna (RCDC), reported that the villagers "have very low self-esteem and display an attitude of despair." When asked their views on development priorities for their communities, 30 percent replied "no idea" (RCDC 1996:4).

All this changed in 1997 when RCDC persuaded the villagers to form the Samyukta Vikas Cooperative and use their own resources to improve their livelihoods. Three community members were chosen as "animators" and trained by RCDC in participatory decision-making and co-op management. These three explained what they had learned to households across the scattered hamlets. The villagers then voted to establish a cooperative of three levels, with farmer families as the bottom tier, elected

hamlet committees as the middle tier, and an elected board, with members from every village, as the highest decision-making authority (Down to Earth 2004:44). The board's first actions were to set up a milk cooperative and a small credit union through which villagers could sell milk and borrow small sums at far less interest than charged by middlemen (TPI 1999).

Once the cooperative was functioning, RCDC linked the villagers with Tea Promoters of India (TPI), a Calcutta-based, family-owned company that manages four organic tea gardens, all run according to Fair Trade standards. During a series of negotiations, the cooperative board voted that all members would convert to organic farming, while TPI undertook to buy the villagers' tea supply, distribute grasses used for soil rehabilitation to the farmers, and train them in organic techniques including composting, pruning, and use of natural pesticides. The company also supplied 4,800 tea saplings at a 50 percent discount (TPI 1999:1-2).

Tea-leaf production from the villages has grown steadily since the first collection for TPI in May 1998. Tea collectors are selected from the community by each hamlet committee, and paid a wage by TPI. Other co-op members transport the leaves to TPI's nearest tea garden, where they are processed and blended for export (Down to Earth 2004:44).

Samyukta Vikas Cooperative is the first non-plantation, cooperative tea supplier established in Darjeeling. Since 1999, organic English Breakfast, Earl Grey, and green tea sourced from its family-owned plots has been exported by Tea Promoters of India to the Fair Trade company Equal Exchange, based in Massachusetts. From there it is sold to food co-ops, health stores, churches, restaurants, and cafes around the United States. TPI, Equal Exchange, and Dritwelt Partners, a European certification organization, jointly bore the cost of the international organic certification process for the Samyukta Vikas Cooperative's tea supply. In 2004, Tea Promoters of India provided more than eight tons of tea to Equal Exchange (nearly 140,000 boxes), 10 percent of which came from the Samyukta Vikas Cooperative (Howard 2005).

While it remains a small-scale enterprise, the successful collaboration between community-owned farms in Darjeeling, local Fair Trade exporters, and overseas Fair Trade importers demonstrates one route by which global markets, when combined with fair prices and local governance over use of natural resources, can benefit poor producers in developing nations. 🌿

also common in forests, such as India's Joint Forestry Management agreements, where communities are granted limited management and use rights on state forest lands. The challenge for co-management regimes is to assure that the state cedes sufficient rights and authority to local communities but does not abandon them, leaving the communities without proper support.

5. Accounting for the scale challenge. Inherent in the management of ecosystems is the problem of scale. Ecosystems can exist simultaneously at different scales, from a forest block in a single watershed to interconnected forest tracts extending a thousand kilometers. Sustaining ecosystems requires keeping in mind the interconnections between these scales, from micro to macro. Forest management in one community's watershed may affect downstream communities and adjacent forests. Local communities cannot be expected to manage well at this macroscale, and thus the state retains an essential role here. This means helping to coordinate management plans in adjacent communities—and across the nation—so that they do

not conflict or overemphasize a single kind of use (Shyamsundar et al. 2004:20). The state also has an oversight responsibility to make sure that local management aligns with national environmental laws, and even with international treaties such as the Convention on International Trade in Endangered Species (CITES).

6. Monitoring and enforcement. Good ecosystem management relies on keeping harvest activities, tourist use, or other impacts within the ecosystem's tolerances. This in turn demands an attempt to monitor the state of the ecosystem or the intensity of the impacts so that management decisions can reflect conditions on the ground. It also demands enforcement of the community's harvest or use rules and the prevention of illegal logging, fishing, or other encroachment on the resource. Communities can often develop monitoring and enforcement capabilities, and, in fact, this is one area of group participation that can become a source of empowerment, as community members develop scientific skills or volunteer as forest guards or game wardens. But for transboundary monitoring or enforcement



actions where large-scale poaching or illegal activity is involved, the state can usefully intervene with personnel or funds or both.

7. Capacity-building and networking. Developing the management acumen required to effectively manage a fishery, game population, ecotourism trade, or forest concession takes time and training. While NGOs can help with much of this capacity-building and training, the state—as a repository of skills and budget in these areas—clearly has a part to play. The state, as overseer and coordinator, also has a natural role in helping communities share lessons and skills. It can also help communities participate in larger international networking efforts and partnerships, such as UNDP’s Equator Initiative, which brings together governments, NGOs, businesses, and local communities to identify and support examples of sustainable community resource management that increases rural incomes.

8. Supporting communities with transportation, credit, and market regulation. If one of the prime goals of local management is to increase income from the community resource, then the state can help by fulfilling its traditional role of supporting economic development by assisting local communities to develop their transportation and marketing infrastructure. Without an outlet to viable markets and the knowledge and funding to create demand, local communities will not be able to maximize their gain and reward good management practices. At the same time, the state must do its part to insure that competitive markets exist for the products of rural enterprise. That means regulating markets to avoid the price-fixing and monopoly control of resource markets that frequently occurs in poor nations.

When the state supports communities by playing these roles well, it can greatly increase the chances for successful local management. In turn, the state can look forward to significant returns on its investment in the form of better management results, higher tax revenues, reduced resource conflicts, and smaller outlays for monitoring and enforcement (Shyamsundar et al. 2004:13-14).

3 COMMERCIALIZING ECOSYSTEM GOODS AND SERVICES

Success at managing ecosystems can bring the poor higher agricultural yields, more fodder, and higher fish catches. Success at creating local institutions that serve the poor can bring a fairer distribution of this enhanced productivity. But these steps alone do not necessarily bring wealth. They may enrich the household diet and stabilize daily subsistence, but they do not assure the kind of cash income that aids the transition out of poverty. That usually requires successful commerce. Success at commercializ-

ing ecosystem goods and services often marks the difference between using nature as a low-income livelihood support and making it a substantial source of cash and a path to the accumulation of economic assets (Marshall et al. 2003:128, 135-136; Neumann and Hirsch 2000:43). There are several important elements to successful commercialization:

Provide Marketing Assistance

Product processing, marketing, transport, and sales are the main aspects of commercialization. While emphasis is often placed on the process of production itself—the farming, fishing, or collection of wild products—the importance of the commercialization process is sometimes under-appreciated. That’s unfortunate, because commercialization factors are the most frequent obstacles to higher cash income from ecosystems. A recent study in Mexico and Bolivia found that marketing and sales—not production issues—were the main constraints to successfully turning nontimber forest products like resins, basket-weaving materials, honey, bamboo, and bark into successful commercial products (Marshall et al. 2003:130, 135).

These constraints manifest in a variety of ways. Rural farmers and fishers may lack a way to get their products efficiently to market. Forest collectors may not know how to effectively price their product, may lack information on how to improve their product’s quality or consumer acceptability, and may not know how to build demand in specialty markets in urban areas or among tourists. Guides or others serving the ecotourist market may lack contacts, experience, or language skills to market their unique services. It is not surprising that research suggests an urgent need for better business planning, market analysis, and market development if rural ecosystem users are to find commercial success (Marshall et al. 2003:135).

To a certain extent, sheer lack of information on current market conditions and trends contributes to lack of marketing power. New information services can help with this. In Uganda a coalition of NGOs, government agencies, and private companies operates FOODNET, a regional network that collects weekly or daily price information on commodities. Rural farmers access the information through radio broadcasts, the Internet, and cell phones. The service, which reaches seven million people weekly, prevents middlemen from manipulating prices to undercut producers. Farmers estimate that the service has raised their return on products by 5-15 percent (WRI 2005).

But the problem goes deeper as well—to a lack of training in business planning. NGOs and state extension services can be important partners in providing the training and technical support to meet these planning and marketing needs. For example, Mexico’s PROCYMAF program, cofinanced by the government and the World Bank, offers training to community enterprises in forest management as well as marketing information for wood and nonwood products. The program has financed over 60 marketing studies and 10-12 pilot projects to test the viability of nontimber forest product enterprises (Scherr et al. 2003:50, 57).

Understand the Limitations of Transportation

Rural areas are notoriously difficult to reach. Roads and rail links are usually scarce, often in disrepair, and frequently impassable. This puts transportation high on the list of critical factors determining the commercial viability of ecosystem goods and services that the rural poor may wish to market. In the remote Iquitos region of Peru, for example, transportation costs are often the deciding factor in what is marketed (Neumann and Hirsch 2000:51-52).

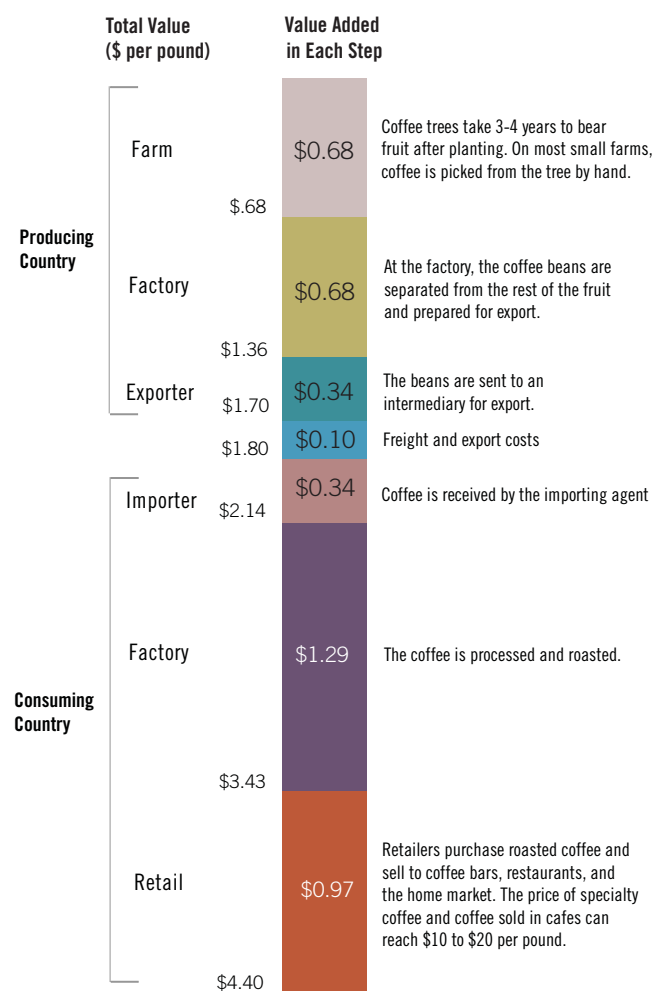
Fresh fruits, vegetables, fish, milk, and other perishable items are particularly subject to the limitations of transport infrastructure. In Nigeria's Niger River delta region, marketing of the African or Bush Pear (*Dacryodes edulis*)—a nutritious and valuable fruit much in demand—is held back by impassable roads during the rainy season, just when the pear is bearing most heavily (Adewusi 2004:144). Likewise, a market analysis of palm fruits harvested in the one of Brazil's Extractive Reserves found that it was only profitable to market those fruits picked within 114 km of a market—about 3.5 days travel time. Beyond that, it was too slow and too costly to be worth the effort (Neumann and Hirsch 2000:52).

Of course, the need to provide efficient rural transportation goes well beyond its importance to building markets for ecosystem goods. It is a basic requirement for rural development more broadly. Studies show that transportation deficits and bottlenecks are an obstacle to economic growth. The connection of roads to poverty reduction is also well-understood. A recent study shows that living close to a highway decreases a household's chance of being poor by 17 percent and increases its access to work by 32 percent (Manasseh and Chopra 2004). Nonetheless, providing adequate rural transportation has been a constant challenge for national and local governments due to the high costs of transport infrastructure, and it is likely that getting products to market will remain a lingering problem for poor producers.

Make Credit Available

One of the most frequently cited constraints to commercializing environmental goods is a lack of financial services such as loans or credit. Credit is simply unavailable in many rural settings, handicapping the ability of the poor to use their environmental assets. By one estimate, 500 million economically active poor families have no access to credit or other financial services. Without access to credit, the poor must rely on their own savings to capitalize their enterprises, but these are frequently inadequate to fully exploit their economic opportunities (Marshall et al. 2003:135; IFAD 2004:9).

FIGURE 4.4 COFFEE MARKET VALUE CHAIN



Source: Wheeler in Fitter and Kaplinsky 2001

Considerable strides have been made in recent years in providing new credit channels for the poor, from informal savings clubs to more formal Grameen-type microfinance banks. These have dispelled the myth that the poor are not creditworthy or are unable to save (Morduch and Haley 2002:2-3). But the dimensions of the credit problem require continued progress in extending microfinance to diverse rural communities. One promising strategy involves taking advantage of the fact that the poor have already formed thousands of self-help groups and saving clubs to address their own finance needs. Linking these groups with traditional banks would allow the banks to extend their services to a ready-made clientele with a history of enterprise and saving. In turn, these small groups of poor households would then become connected to the larger financial market and could draw on its business expertise (IFAD 2004:15).

Other more traditional strategies will be needed as well if credit availability is to rise substantially. These include strength-

ening rural banks, both private and community owned; reforming agricultural development banks so that they become major microfinance providers; and helping current microfinance providers to create networks and take advantage of supporting services such as credit rating and refinancing (IFAD 2004:12-14).

Capture Greater Value

Increasing the economic return that the poor realize from nature-based products is an important element in any strategy to use nature for poverty reduction. Many of the goods that the poor produce or obtain from nature yield low prices relative to the labor involved. Changing this involves action at three different levels.

Improve Production and Processing

The first level of creating value is improving production or processing efficiency so that the same labor yields more or a higher-quality product. An important aspect of this is improving the storage and handling of products to reduce losses and improve quality. A high rate of post-harvest losses is typical for small producers. In Ethiopia, post-harvest grain losses from spoilage, insects, and rodents rob grain producers of 5-26 percent of their harvest (Gabriel and Hundie 2004:4). Losses of milk in Tanzania total some 60 million liters per year, worth over US\$14 million (FAO 2005). Reducing losses involves a concerted effort to educate small-scale producers about good production hygiene and the use of low-cost technologies for storage and shipment. For example, FAO is currently helping to implement milk-hygiene programs for small producers in East Africa, and to explore the adoption of an inexpensive milk preservation system called the lacto-peroxidase system to extend shelf-life of small-producer milk (ILRI 2003:6).

Paying more attention to factors like appearance, packaging, or labeling, particularly for export or tourist markets, can also raise the value of products. State extension agents or NGO technical assistance can frequently help. In one example, small farmer cooperatives in Nicaragua have worked with the U.S.

Agency for International Development and the Thanksgiving Coffee Company to build “cupping labs” to taste their coffee after processing. Thanks to the labs, the Nicaraguan farmers have begun garnering international awards for coffee quality and are successfully reaching specialty markets in Europe and the United States (Bacon 2002:i-iii; USAID 2004:1).

Cooperatives Raise Marketing Power

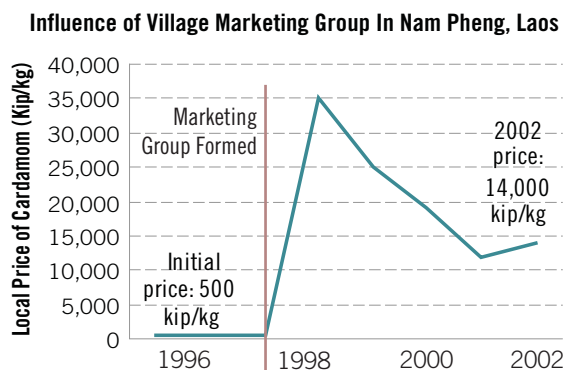
The poor frequently capture only a small percentage of the value of the ecosystem products they sell, while middlemen and retailers higher up the commodity chain often capture a much greater share. Middlemen perform valuable services by transporting products to wider markets and tapping into distribution chains to which the poor have no access. But they are also key actors in keeping producer profits low. For example, small-scale coffee farmers capture, on average, only 4.5 percent of the retail price of coffee sold in U.S. supermarkets (Gresser and Tickell 2002:21). In Senegal, an analysis of the charcoal commodity chain likewise found that the profit of a typical woodcutter at the base of the chain is less than 4 percent of the profit that an urban charcoal wholesaler earns (Ribot 1998:318). (See Figure 4.4.)

A common way for rural producers to increase their market power and avoid middlemen is to form cooperatives or marketing groups. These groups can help poor producers receive better market information, increase their prices, and expand their markets. They also provide a natural forum for training, networking, and sometimes for management of the resource being marketed. In Nam Pheng village in northern Laos, villagers formed a marketing group in 1998 to coordinate their harvest of bitter bamboo and cardamom and to try to increase the price received at market. The marketing group collects the villagers’ individual harvests, sells them on a large scale to traders, and delivers 85-90 percent of the final sale price to villagers (Morris 2002:4-5).

The effectiveness of the group was immediately apparent when, shortly after forming, they were able to raise the local price of cardamom from 500 Lao Kip per kilogram to 35,000 Kip. Although the price has since dropped to 14,000 Kip, it is still well above what villagers got when they marketed on an individual basis. The 10-15 percent of the sale price that the marketing group keeps goes into a community investment fund that has supported a new school and an improved water supply, as well as providing loans for a number of households. The marketing group has ventured into management by setting regulations for when and how much to harvest, and also providing training in collection techniques. Decisions are made jointly by the marketing group members, which include virtually all households in the village (Morris 2002:4-5). (See Figure 4.5.)

In Mexico, the Union de Ejidos de la Selva, a peasant organization, has helped organize small coffee producers in Chiapas state into an effective marketing force. The union collaborates with 1,250 families in 42 communities to ensure the adoption of better soil-management and environmental

FIGURE 4.5 MARKETING GROUPS RAISE PROFITS



Source: Morris 2002

practices, including certified organic techniques that limit erosion and water pollution. The union has partnered with a civil society organization called the *Vinculo y Desarrollo* to create a chain of five up-scale coffee shops in Mexico City—the *Café de la Selva*—that serves the organic coffee produced by the *Union de la Selva* farmers. By controlling the entire vertical chain of coffee production, the *Union de Ejidos de la Selva* has been able to capture the full urban consumer value of coffee and use it to improve farmer income and self-sufficiency (Samperio 2002).

Use New Commercial Models

A third tactic for increasing commercial payoff is to make use of new models of commercialization, such as organic certification or the Fair Trade movement. These specialized markets, in which consumers purchase an item (often at a premium) in order to further social, environmental, and health goals, have continued to grow year by year. Although they do not account for a large percentage of total sales of any commodity, these markets can offer several advantages. The Fair Trade movement, for example, is targeted to support small rural producers, with the explicit goal of providing a fair wage for growing or crafting export items such as coffee, tea,

bananas, or any of a number of handicrafts. It essentially amplifies the idea of a typical cooperative or marketing group to the global level, offering low-income producers a route to high-value international sales they would otherwise have little chance of obtaining. (See *Box 4.2*.)

The markets for certified organic food, sustainably harvested lumber, and sustainably caught seafood also offer potential for low-income rural producers. Certification offers consumers a guarantee—through inspections or other verification methods—that a given product has met certain standards in its growth, harvesting, or processing. The kinds of small-scale production that the poor engage in often lend themselves to organic or sustainable methods. Many small coffee producers, for example, follow organic practices by default.

But certification offers challenges to the poor. The most significant is meeting the cost and technical requirements of certification. For example, fishery certification by the Marine Stewardship Council requires a time-consuming and expensive evaluation of the harvest levels and equipment used by fishers; forest certification similarly requires a verified forest management plan. For the poor to be able to participate, their certification costs will need to be reduced or subsidized by donors, NGO

CAPITALIZING ON THE COMPETITIVE ADVANTAGES OF THE POOR

Although they suffer some obvious disadvantages, small rural producers also hold some competitive advantages that can help them successfully commercialize their ecosystem assets. Exploiting these advantages increases their economic leverage.

- **Control of commercially valuable forest resources, land, or fishing rights.** Poor households and communities with well-established resource tenure are sometimes in a position to parley this into commercial opportunities. This is especially true for those communities within reasonable proximity of expanding centers of domestic or industrial demand, such as inland cities far from commercial ports. Constraints on the private sector's ability to meet wood demand in India, for example, have motivated more than a dozen companies to partner with rural farmers to grow trees on the farmers' lands (Mayers and Vermeulen 2002:45; Scherr et al. 2002:4-5).
- **Lower cost structure for some products.** For communities or farmers with excess labor or land not currently under crops, there may be little opportunity cost for growing trees or establishing low-tech aquaculture ponds. These operations may have lower costs than large-scale plantations or high-tech fish-raising enterprises run by outside business interests. Agroforestry systems, for example, may offer lower costs for tree production because trees are produced jointly with crops and livestock. For products like wood fuel and charcoal, transportation costs even from rural communities may be lower than importing these commodities from international markets (Scherr et al. 2002:4-5).
- **Sole providers of some products.** Because of their access to ecosystems and their traditional knowledge, poor households may be in the

best position to supply some niche markets, such as for medicinal plants, exotic fruits, or traditionally made handicrafts or art objects. They may also be in the best position to sell to "socially responsible" markets, which may value the fact that their products come from small community enterprises rather than factory farms or plantations (Scherr et al. 2002:4-5).

- **Ability to compete in domestic markets for some products.** Low-income producers may not always be able to be competitive in international trade, but they can frequently compete effectively in domestic markets. This is particularly true for certain products that do not offer high margins, such as "commodity grade" wood used for fencing, storage structures, crop and tree supports, or packing crates. Larger international producers typically do not compete in these markets with cheaper domestic products, which small-scale farmers can in many cases supply by growing trees in agroforestry schemes or wood lots (Scherr et al. 2002:4-5).
- **Better monitoring and enforcement abilities.** Local people may have greater ability than outside companies to prevent illegal logging or fishing. This may mean they are in a better position to assure the quality of certified wood or fish products (Scherr et al. 2002:4-5).

In general, low-income communities will find it easier to compete in commercial markets where there is less competition with large-scale producers, where there are few substitutes for their goods, where their low labor and start-up costs give them a lower overall cost structure, and where their deficits in transport are minimized.



partners, or the state. Innovations in the certification process to make it more inclusive can also help. One forest certification organization has experimented with videotaping community members as they describe their management and implementation plans, rather than making them submit a written plan (Shanley et al. 2002:296).

Another difficulty for the poor is that forest or organic certifications generally focus on the land where the timber or crop is grown, guaranteeing certain practices—such as absence of pesticide use for a specified number of years—on these lands. For those with secure ownership of land and resources, this may be fine. But many nontimber forest products are collected on common lands or by the landless, so guarantees about a given parcel of land cannot be made. In this case, certification may have to be modified so that it focuses on the training and practices of the harvesters themselves, with certification residing with a harvester association rather than with a land parcel (Shanley et al. 2002:296-298).

Partner with the Private Sector

It is hard to imagine successfully commercializing ecosystem goods and services without substantial participation of the private sector. The capital, facilities, know-how, and markets that businesses command make them strong potential investors and partners for nature-based enterprises of the poor. In Southwestern Ghana, the Swiss Lumber Company has entered into contracts with rural farmers to grow hardwoods on

degraded lands, where they will not compete with agriculture. The company provides a lump-sum down payment, a 20-50 percent share (depending on the size of the down payment) of the timber at harvest, and an annual land rent. In return, Swiss Lumber—which does not own timber lands or have access to government timber concessions in the area—gets first option to buy the timber at market prices when the trees are ready for harvest (Mayers and Vermeulen 2002:141).

As the Swiss Lumber example shows, the business relationships that can develop between rural residents and companies can be beneficial to both. For poor households, benefits can include a more consistent income stream and access to credit, training, business planning, and marketing. One of the biggest benefits is that poor households can share the risks of a business venture rather than assume all the risks on their own (Mayers and Vermeulen 2002:viii, 97-101).

The obvious benefits to companies are access to raw resources such as timber, fish, nontimber forest products, or scenic sights and experiences for tourism. The poor also comprise a low-cost labor force for management tasks like tree pruning, growing of specialized crops, or hand-collection of wild fruits. In addition, despite their limited means, poor households can provide a substantial consumer pool for the products and services that companies sell. Targeting sales to the sizable consumer group at the “bottom of the pyramid” is a strategy that many companies are beginning to explore, and building brand recognition and engagement with rural communities is a first step to this end. (See Box 4.3.)

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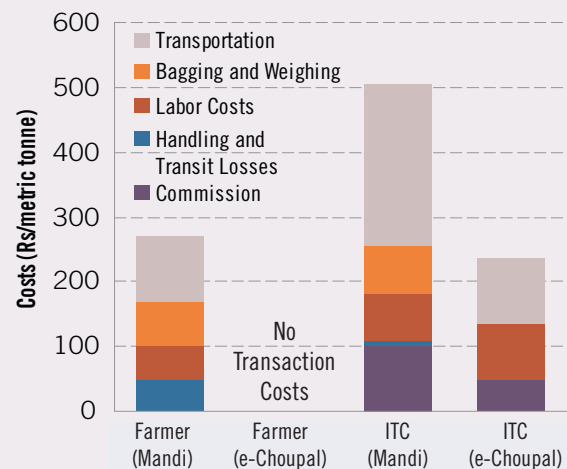
BOX 4.3 SERVING THE POOR PROFITABLY: A PRIVATE-SECTOR APPROACH TO POVERTY

THE 4 BILLION PEOPLE WHO LIVE IN RELATIVE POVERTY are a potentially huge market. In the aggregate, their purchasing power is substantial, even if their individual means are limited. Increasingly, innovative companies are finding ways to serve these customers—meeting their basic needs and empowering them through access to information, access to credit, expanded consumer choice, and other benefits. These are not philanthropic endeavors; they are market-driven and intended to be profitable. Indeed, to be sustainable and scalable, they must be profitable. The hallmark of these private-sector approaches to poverty is close attention to the real needs and social and environmental circumstances of the intended customers. In many cases, new products or services are co-created with the communities for which they are intended.

An example of these poor-focused business models is the e-Choupal system deployed in rural farming areas in several Indian states by ITC, one of India's leading private companies with interests in agribusiness, packaged foods, and a range of other products. The e-Choupal system was designed to address inefficiencies in grain purchasing in the government-mandated marketplaces known as *mandis*. In the *mandi* system, traders who act as purchasing agents for buyers control market information and are well-positioned to exploit both farmers and buyers through practices that sustain system-wide inefficiencies. Farmers have only an approximate idea of price trends and have to accept the price offered them at auctions on the day they bring their grain to market (Annamalai and Rao 2003:1, 8-9).

The approach of ITC has been to place computers with Internet access in farming villages, carefully selecting a respected local farmer as its host. Each e-Choupal (*choupal* means gathering

REDUCED TRANSACTION COSTS UNDER E-CHOUPAL



Source: Annamalai and Rao 2003

place in Hindi) is located so that it can serve 6-10 villages, or about 600 farmers. An e-Choupal costs between US\$3,000 and \$6,000 to set up, and about US\$100 per year to maintain. Using the system costs farmers nothing, but the host farmer, called a *sanchalak*, incurs some operating costs and is obligated by a public oath to serve the entire community. The *sanchalak* benefits from increased prestige and a commission paid for all e-Choupal transactions (Annamalai and Rao 2003:1, 11).

Farmers can use the computer to access daily closing prices on local *mandis*, as well as to track global price trends or find information about new farming techniques. They also use the e-Choupal to order seeds, fertilizer, and consumer goods from ITC or its partners, at prices lower than those available from village traders. At harvest time, ITC offers to buy crops directly from any farmer at the previous day's market closing price; if the farmer accepts, he transports his crop to an ITC processing center, where the crop is weighed electronically and assessed for quality. The farmer is then paid for the crop and given a transport fee. In this way, the e-Choupal system bypasses the government-mandated trading *mandis* (Annamalai and Rao 2003:1, 13-14).

Compared to the *mandi* system, farmers benefit from more accurate weighing, faster processing time, prompt payment, and access to a wide range of price and market information. Farmers selling directly to ITC through an e-Choupal typically receive a price about US\$6 per ton higher for their crops, as well as lower prices for inputs and other goods, and a sense






of empowerment. At the same time, ITC benefits from net procurement costs that are about 2.5 percent lower (it saves the commission fee and part of the transport costs it would otherwise pay to traders who serve as its buying agents at the *mandi*) and it has more direct control over the quality of what it buys.

The e-Choupal system also provides direct access to the farmer and to information about conditions on the ground, allowing the company to improve its planning and build relationships with farmers that increase its security of supply. The company reports that it recovers its equipment costs from an e-Choupal in the first year of operation and that the venture as a whole is profitable. As of late 2004, e-Choupal services reached more than 3.5 million farmers in over 30,000 villages, and the system is expanding rapidly (e-Choupal 2005).

What began as an effort to re-engineer the procurement process for cropping systems has also created a highly profitable distribution and product-design channel for the company—an e-commerce platform that is also a low-cost fulfillment system focused on the needs of rural India. Advocates for the e-Choupal system say that it has acted as a catalyst for rural

transformation, helping to alleviate isolation, create more transparency for farmers, and improve their productivity and incomes. The increased system efficiencies and potential for improving crop quality also contribute to making Indian agriculture more competitive.

Although many farmers are happy with the e-Choupal system, not everyone has benefited from it. Since its success draws business away from the traditional *mandis*, many of the workers at the *mandi* exchanges have been severely affected. Laborers who used to weigh and bag the produce at the *mandis* have suffered from the drop in volume. Vendors at the informal bazaars that grew up around the *mandis* have also lost business as traffic has been diverted to the new ITC processing facilities. In the long run, these workers may be reemployed at the ITC exchanges, but in the short term many traditional *mandi* players have lost income (Annamalai and Rao 2003:25-26).

In spite of these transition costs, the e-Choupal experience and others like it are building confidence that private-sector actions can contribute substantially both to poverty alleviation and to sustainable commercialization of ecosystem services. 

Engaging with rural communities can also help companies meet demand for specialized products such as certified lumber or organic foods. In 1990 the U.S. company Smith and Hawken faced growing consumer demand for sustainably harvested tropical hardwoods such as mahogany for furniture and other high-end home furnishings. In response, it helped *campesino* forestry groups in northern Honduras—community organizations of 5-50 members that manage state forests under use agreements with the government—attain certification for their mahogany and other hardwoods. The *campesino* groups are now using the publicity they have received to expand the market for less well-known woods (Mayers and Vermeulen 2002:147).

Arrangements like the ones undertaken by Swiss Lumber and Smith and Hawken to contract with rural farmers to supply trees are perhaps the most common arrangements between poor households and natural resource companies. These “outgrower” schemes are programs where timber companies pay small farmers to plant trees on their own (or sometimes communal) land in order to ensure a reliable supply of timber in the future. The schemes, which can be found in many countries on every continent, vary widely by company and by country. In some, the company provides seedlings, access to credit, technical help in planting and caring for the trees, and even the construction of roads for harvest. In other cases, the arrangements are more sparse, with no finance and little other than seedlings and an offer to buy the trees at market price (Mayers and Vermeulen 2002:140-154).

The poverty-reduction potential of outgrower schemes varies, but can be sizable. In the South African province of KwaZulu Natal, some 10,000 farmers—more than half of them women—participate in the outgrower programs of the Sappi and Mondi paper companies. With materials supplied by the companies, the farmers grow eucalyptus trees on their small plots of a few hectares. Sappi and Mondi agree to purchase the plantation wood after 6-7 years for their pulp mills. Studies have shown that participating in these outgrower programs contributes 12-45 percent of the income needed for a household to remain above the “abject poverty line,” so outgrower programs can be important sources of stability in some rural economies (Scherr et al 2003: 51; Mayers and Vermeulen 2002:143).

For companies, outgrower programs can benefit the corporate image as well as securing the timber or pulp supply for the future. In Brazil, pulp-and-paper company Klabin works with timber outgrowers in a variety of joint ventures that have generated annual income for farmers ranging from US\$76 to \$217 per hectare. Klabin’s stated reasons for running its outgrower program include the need to maintain a good company image. The company also tries to get its outgrowers certified as sustainable timber producers in order to supply the demand from local furniture companies that want certified wood. Klabin has guaranteed 10 years of timber supply to these small furniture companies, which it hopes its outgrowers will provide (Mayers and Vermeulen 2002:143).



Despite the promise of such programs, nature-based investments in poor communities are not necessarily easy for companies or communities, and are by no means always successful. The history of such partnerships shows many missteps, reflecting the difficult circumstances of poor households that push them to seek quick returns at low risk, and demands investments of training and trust-building. For example, several outgrower programs in India were plagued with inconsistent participation by poor families. Free seedlings offered by the companies were often neglected; loan and credit deals were too complicated and cumbersome to be attractive; and participants often abandoned the programs when they learned they could find better prices on the open market than the prices offered by the companies (Mayers and Vermeulen 2002:v, 45-52).

For both companies and communities, partnerships sometimes have high transaction costs, and take negotiation and continued care to succeed. In addition, coping with government regulations can be confusing and time-consuming. Experience shows that it is important for both sides to enter an outgrower agreement with realistic expectations about the income potential and the responsibilities of each side. Outside legal advice, perhaps provided by an NGO, can help poor families clarify contracts, while a system of arbitration set up ahead of time can help resolve disputes. It takes energy and good faith to deal with these complexities, but where there is willingness on both sides, the local income gains and corporate benefits can be substantial (Mayers and Vermeulen 2002:xi-xv).

Keep Sustainability in Mind

Success in commercializing an ecosystem good or service creates its own problems. If a poor household or a rural community finds a winning formula for production, marketing, and delivery of a nature-based product, the temptation will be to push the formula to its limits to increase sales and income. This can easily lead to overexploitation of the type that typically degrades ecosystems. Reconciling the desire to maximize income with the need to sustain ecosystems so that they remain productive assets is one of the inherent challenges of using environmental income for poverty reduction (Neumann and Hirsch 2000:102).

Succeeding Too Well

An example of the dangers of succeeding too well with marketing a natural product can be found in Bolivia, where one indigenous community worked hard to commercialize the sale of string bags made of natural sisal fiber they collected and processed from the wild. They developed a low-cost marketing model to get their bags to customers in Europe, who paid a handsome price. As this enterprise began to succeed, local women involved in bag-making saw their purchasing power increase markedly. This, in turn, encouraged them to rely more on making sisal bags for income, abandoning other lower-profit activities such as subsistence agriculture. As economic reliance on sisal bags spiraled upward, pressure on native sisal plants grew, depleting local sisal sources around the community, and eventually forcing locals to lower their harvest to a more sustainable level (Shanley et al. 2002:279).

Many other examples of the potential for unsustainability can be found. African bushmeat hunting, for example, has reduced the population of primates like chimpanzees, whose low reproductive rates make them especially vulnerable to overharvest. The use of cyanide by poor fishers in Indonesia and the Philippines to catch prized fish for sale to high-end restaurants has decimated many coral reefs (Barber and Pratt 1997:10-21). In Southern Africa, the expanding market for handmade baskets has put pressure on some 30 indigenous plant species used for fiber and another 22 used for dyes. In western Zimbabwe, one weaving club that began with 20 members in 1986 had expanded to 500 by 1988. This is all the more remarkable given that handmade basket-making had only begun as a commercial enterprise in the 1970s as an economic development project in Botswana (Neumann and Hirsch 2000:102-103, 107).

In these examples, activities which, when pursued on a limited basis, might not harm the resource are pushed to unsustainability by sheer expansion of the scope of the activity. But there are other contributors to unsustainable commerce too. In some cases poor harvesting techniques or agricultural practices exacerbate the situation. Some harvesters of African *mbare* palm leaves—one source of basket-making fiber—engage in wholesale cutting of the palms, which kills them. A sustainable alternative is to simply cull individual leaves, which permits the palm to continue growing (Neumann and Hirsch 2000:103-104).

Governance Matters

Governance factors such as tenure—or lack of it—also play a role. Sometimes when a new market appears for a nontraditional product, there may not be a well-defined system of customary practices surrounding ownership and use of the product, and the resource essentially becomes an open-access resource subject to no practical controls on its use. Ecotourism can even fall into this category sometimes. In other instances, there may be well-defined customary or legal property rights over a valuable medicinal, fruit, or other resource, but it may break down as the market for the product—and its value—increases, leading to poaching. This emphasizes the important role of enforcement—through custom or law—in complementing well-defined resource tenure as foundations for viable commerce (Neumann and Hirsch 2000:105-106).

Diversity is Sustainable

Ultimately, the question of sustainability boils down to a question of ecosystem capacities and trade-offs. How much disturbance can an ecosystem tolerate and still remain healthy? What opportunities for environmental income are lost as other opportunities are emphasized? And perhaps most importantly, what is the best strategy to optimize environmental income without compromising ecosystem integrity?

The answer to this last question is not simple, but the idea of diversification of activities and income streams is one approach that many analysts have put forward. A mix of commercial uses of nature, including agriculture, agroforestry, collection of nontimber forest products, and commercial fishing may yield greater ecological resilience, at least at a landscape level. It may also offer greater economic stability for rural economies. From a household perspective, a portfolio of different products and activities will minimize risks for poor families. Neither a monoculture nor a monocultural approach to environmental income is likely to give the best results (Chater 2003:3-4; May 1992:4; Scherr et al. 2003:22).

4 AUGMENTING NATURE'S INCOME STREAM: PAYMENT FOR ENVIRONMENTAL SERVICES

When the poor engage in good ecosystem stewardship, they create the conditions for higher productivity and greater direct environmental income for themselves. But they also safeguard ecosystem services whose benefits extend beyond their immediate surroundings. By maintaining a healthy forest cover, for example, they are helping to preserve watershed services like flood control, continuous water supply, and erosion control that landowners downstream will benefit from. In the past, these services have been considered “public goods” and available for free, but in recent years it has become clear that many of these

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BOX 4.4 PAYING THE POOR FOR ENVIRONMENTAL STEWARDSHIP

PROGRAMS THAT PAY LANDHOLDERS TO MAINTAIN ecosystem services like storing carbon, maintaining stable water flow, or preserving scenic landscapes for tourism have burgeoned in the last decade. Most of these “payment for environmental service” (PES) programs don’t do a good job of reaching the poor, even though poor households are often active environmental stewards. A small but growing number of projects show that this does not always have to be the case. Two PES programs in particular—in the Cauca Valley of Colombia and in Chiapas, Mexico—demonstrate how PES can yield benefits for poor communities.

Cauca Valley, Colombia

In the late 1980s, private farmers initiated a voluntary system of payment for water use in the Cauca Valley, Colombia. The payment system was designed to improve the livelihoods of the upland poor as part of a strategy for sustainable watershed management. The uplands of the Desbaratado Watershed in the Cauca Valley were inhabited by poor farmers. Seventy-two percent lacked sanitary facilities and 83 percent had no electricity, but most held titles to their land (Echavarría 2002:6).

Overgrazing and deforestation on the slopes of the watershed had led to erratic stream flows and destructive seasonal flooding in the lower basin, the effects of which were being felt by landowners downstream. These landowners consisted mainly of wealthy sugarcane growers who had invested in costly farming technologies, including laser leveling and underground drainage and irrigation systems (Echavarría 2002:7). With the threat of continually escalating costs to protect their investment, the farmers became interested in regulating the stream flow by restoring and improving management of the lands in the upper watershed. They subsequently organized into twelve Water User Associations and instituted voluntary user fees to finance upland watershed management.

The Water User Associations came to the conclusion that the surest route to achieving long-term land-use change in the upper watershed was to improve the livelihoods of the land users. With the aid of the government, planners met with upland communities to identify community priorities for development. The result of these meetings was a series of programs with wide-ranging social benefits, including:

- A “social program,” providing education and skills training;
- A “production program,” which includes building home gardens to improve diets and increase earnings, as well as reforestation and crop-planting projects;

- An “infrastructure program,” which focuses on improving sanitary and drinking water facilities, building roads, and constructing erosion control structures (Echavarría 2002:7).

From 1995 to 2000, an estimated US\$1.5 million was invested in the upper watershed—all from the water fees assessed by the Water User Associations (Echavarría 2002:5). So far, the environmental commitment of downstream users has remained strong, and upland projects have continued even in the face of armed guerilla activity in the region. Considering the length of the project, this suggests that benefits on both sides have been worthwhile.

Chiapas, Mexico: Scolel Té

The Scolel Té project in Chiapas, Mexico, represents one of the first efforts to make the international market for carbon storage benefit poor communities. Companies interested in offsetting their greenhouse gas emissions can purchase carbon credits from a local organization, Fondo BioClimático, with two-thirds of the revenue going to farmers (Scherr 2004:43; IUCN 2003:1). The largest buyer thus far has been the Fédération Internationale de l’Automobile, which purchased over 13,000 tons of credits to offset some of the emissions from professional auto racing (IUCN 2003:1).

Farmers who join the Scolel Té scheme must draw up a management plan for their land and agree, to the extent possible, to maintain the trees on their land over the long-term. Fondo BioClimático provides technical support and training to participants in managing their land (Phillips et al. 2002:8). Scolel Té is more than a strict reforestation program. It also allows participants to plant “live fences,” shade-grown coffee plantations, and mixed agroforestry plantations. In addition to the PES payment they receive, farmers can make money on regulated sales of timber as well as non-timber products. They also commonly plant food crops under the trees until the canopy closes over (IUCN 2003:1). Because of this variety of income sources, the program is more attractive to farmers.


Since it began in 1996, Scolel Té has gained more than 700 participants in 40 communities. In 2002, sales of carbon credits at US\$12 per ton amounted to \$180,000, translating into \$120,000 distributed among the participants (IUCN 2003:1). The project has also enabled farmers to penetrate markets in sustainable timber, organic coffee, and other agroforestry products. For many, access to these valuable markets has been the more important route to greater income (Rosa et al. 2003:27). The project has generated positive environmental benefits locally as well. Plantings on denuded hillsides are helping to reduce erosion and improve soil quality. 

TABLE 4.2 PAYMENTS FOR ENVIRONMENTAL SERVICES

Locale	Environmental Service	Value to Community
Costa Rica	Forest conservation and reforestation for watershed maintenance and carbon storage	More than US\$100 million disbursed under 10–15 year contracts with over 450,000 ha enrolled in program. Funded by a fuel tax and contributions from private companies. Rodriguez 2004
Pimampiro, Ecuador	Forest protection of headwaters to ensure clean water supply for the town	\$1 per hectare payments constitute 30% of income for those households participating in forest protection. Grieg-Gran and Bishop
Cauca Valley, Columbia	Forest management to improve stream flows and reduce sedimentation of irrigation canals	US\$1.5 million invested in poor communities in the upper watershed by downstream farmers. Scherr et al. 2004
Kerala, India	Discovery and maintenance of a continued supply of Jeevani, a commercially marketed medicine	500–1000 families will earn wage income from cultivation and harvesting of the fruit and leaves that are used to manufacture the drug. Ongoing royalty payments to the community from drug sales. Landell-Mills and Porras 2002
Botswana, Kenya, Namibia, South Africa, Tanzania, Zimbabwe	Support of ecotourism in southern and eastern Africa through the maintenance of landscapes, natural resources, and wildlife habitat	Direct employment of 3000 people; over US\$100,000 reinvested in local economic development and conservation activities. Landell-Mills and Porras 2002
Scholel Té, Chiapas, Mexico	Forest management leading to carbon sequestration	Two-thirds of the value from the sale of carbon contracts goes to farmers. In 2002, US\$120,000 was distributed to 700 participants. IUCN 2003

ecosystem services have a quantifiable economic value. If people downstream are being regularly flooded, the ability of the intact forest to moderate stream flows and lessen the flood risk will be worth something to them, and they may be willing to pay the upstream forest owners to preserve and protect this service—or even to restore it.

In the last decade or so, markets based on this kind of interchange—called *payment for environmental services* (PES)—have begun to develop worldwide. (See Table 4.2.) The most common environmental services marketed so far have been associated with forests and fall into four categories: watershed services like those described above, carbon storage, biodiversity conservation, and preservation of landscape beauty. Since the poor are the stewards of many rural ecosystems, it makes sense that they should be able to tap these payments for environmental services (PES) as an additional source of environmental income—another element of their “nature portfolio.” In a few cases, they have been successful in doing so. But for the most part, the markets for environmental services, which are still in their infancy, do not yet serve the poor well.

Deals involving PES range in scale from local to international and are undertaken by a range of actors, including private companies, NGOs, communities, and state governments. Private businesses that depend on natural resources are sometimes willing to pay for protection of ecosystems, usually following

signs that a resource is threatened or already in decline. In one promising example in Colombia’s Cauca Valley, downstream sugarcane growers hurt by flooding paid upland communities—predominantly poor—to change their land management practices to protect the watershed. This evened out the water supply on the valley sugarcane farms and reduced crop damages, while bringing public benefits—clean water supply, sanitation, and other economic development projects—to the upland communities. (See Box 4.4.)

Payments for preserving biodiversity and landscape beauty often come from conservation NGOs or local businesses involved in ecotourism. For example, Rainforest Expeditions, a private company in southeastern Peru, signed a 20-year agreement with the local Infierno community, splitting profits and management of the business in return for preservation and access to the forest and wildlife on the community’s lands (Landell-Mills and Porras 2002:166).

Governments often act as originators or participants in PES schemes. In 1996 the Costa Rican government became a leader in PES when it established the first national program to dispense payments to farmers willing to maintain or restore forest ecosystems and their services. The program pays landowners to reforest their lands or conserve forest lands they already own, rather than convert them to pasture. By 2004, more than 450,000 hectares were included in the program, and

the government had dispensed over US\$100 million to farmers (Rodríguez 2004:13). The government has used a number of strategies to finance payments, including a national fuel tax, international sales of carbon credits, payments from private utilities and industry, and funding from the World Bank and GEF (Rosa et al. 2003:16).

In Brazil, the government took a different approach in the state of Acre, where it had set aside large extractive reserves for indigenous rubber tappers. To preserve the economic viability of the extractive reserves, it directly subsidized the rubber tapping industry, with the subsidy amounting to an indirect PES program to maintain the natural forest cover of the reserves. In Colombia, the government is experimenting with a regulatory approach, requiring hydroelectric utility companies to transfer a percentage of their earnings to support good land management in upstream communities, thus reducing reservoir siltation and preserving water flows (Tognetti 2001:17).

The Challenges of Pro-Poor PES

Despite the theoretical potential for PES programs to benefit the rural poor, many current programs present serious obstacles to the inclusion of poor households. This reflects the fact that PES programs were originally designed primarily to meet conservation goals rather than support the livelihoods of the poor. The Costa Rican program, for example, grew out of the Forestry Department, and its structure favored larger and wealthier landowners (Rosa et al. 2003:16-19). A survey in one Costa Rican watershed found that while all of the large landholders (owning more than 80 ha) were participating in the program, only one third of small landholders (owning less than 10 ha) had signed up (Miranda et al. 2003:21-22)

The obstacles to including the poor in PES programs mirror many of the problems holding them back from other forms of environmental income. The Costa Rican case, which has been one of the most thoroughly studied, has faced several of these:

- **Tenure and formal titles.** Secure property rights are one of the foundations of a PES program. Land ownership is almost always used to identify who should rightfully receive payments. That leaves those without secure tenure—particularly the landless—unable to benefit unless some special provision is made, or unless benefits are distributed to larger community associations that can then attempt an equitable distribution. In Costa Rica's original PES program, for example, only titled land holders could participate, which blocked many poor farmers. As PES programs mature and the market for environmental services builds, this may provide governments yet another incentive to improve tenure security for the rural poor. In the interim, however, a growing PES program could make things worse for the untenured poor if it makes rural lands more attractive to—and more liable to be snapped up by—large landowners.
- **Restrictions on land uses.** PES guidelines may bar grazing or other traditional forest uses that seem to conflict with the environmental services that the program is paying for. Without access to these or other replacement activities, poor families will not be able to afford to participate in PES programs. Costa Rica's program did not allow farmers to graze cattle or practice agroforestry on any lands enrolled in the program, yet the PES payments were not sufficient to serve as a primary income source. This left many small farmers no choice but to opt out. In 2002 the government amended its program to allow agroforestry activities (Rosa et al. 2003:20).
- **High transaction costs.** The costs of applying for a PES program, drawing up a contract, and monitoring performance can become a considerable burden on poor families. Applicants for the Costa Rican PES program have reported spending large amounts of time and money obtaining and



certifying documents, paying for land management studies, and having quarterly visits from a forest manager. The government has committed to reducing these costs substantially and has also moved to allow groups of small farmers to join the PES program collectively, thereby spreading the costs over a larger group (Miranda et al. 2003:29-32; Pagiola 2002:43-44).

- **Lack of credit and start-up funds.** Changing farming and other land-use practices or reforesting pastures to comply with PES requirements often requires a significant investment in new material, training, and lost income during the transition period. Covering these costs is difficult for poor families, who typically lack credit and cash savings. Costa Rica has tried to address this by front-loading payments to farmers, sending half of the total payments (normally dispersed over five or ten years) within the first year of joining the program (Pagiola 2003:11).

In spite of these obstacles, there is considerable hope that PES programs can be modified to make them work for the poor. The policy attention around PES programs in many nations has shifted to identifying reforms needed to increase their potential for poverty reduction. Costa Rica, for example, has striven in the past few years to modify its program so that it serves the poor better. It is no coincidence that many of the governance changes advocated in this chapter as pro-poor, such as establishing secure tenure and promoting community-based institutions that can collectively bargain for and represent the interests of the poor, are the same governance changes necessary to make PES programs better at poverty reduction.

Even in their current imperfect form, PES programs have managed to deliver some important benefits to low-income participants. Many times these are related more to social organization and skills training than the monetary payment. For example, small farmers in Costa Rica's PES program cite the technical training provided in the program as valuable enough to justify participation, even if the payments themselves are not large. The formation of local organizations to help small farmers take advantage of these schemes has also produced lasting gains in social capital, with the rural poor becoming more willing to demand compensation and ownership rights for natural resources (Rosa et al. 2003:23-26).

Participation in PES programs can also open doors to other sources of environmental income. The small farmers involved in the Scolec Té carbon sequestration scheme did not earn large sums from the environmental-service payments themselves. However, the project enabled farmers to penetrate markets in sustainable timber, organic coffee, and other agroforestry products (Rosa et al. 2003:27).

At their best, PES schemes offer a way to serve conservation goals while they add to the income profile of poor families and build social capital in poor communities. In contrast to the establishment of parks, which in many cases relies on excluding rural residents, the PES approach is more inclusive and based on a

positive role for rural communities in ecosystem management (Rosa et al. 2003:13). Like other forms of environmental income, PES by itself is not likely to allow poor families to escape poverty, but it can become an important contributor to livelihood security due to the regularity of the payments and the incentive they provide to manage sustainably.

BEYOND ENVIRONMENTAL INCOME

In this chapter, we have explored a bottom-up approach to generating environmental income by the poor. We have emphasized that better ecosystem management and a realignment of local resource governance to empower the poor can lead to significant increases in their household incomes. It is a strategy grounded in the belief that rural poverty reduction can begin with nature—the resource and employment base that already supports rural livelihoods.

At the same time, we realize that poverty reduction depends on many factors beyond our discussion in this chapter. For example, we have emphasized that good ecosystem management combined with effective commercialization of nature-based products helps reduce income risks for low-income families. But poor families face risks other than inadequate or uneven income, such as the risk of catastrophic loss from natural disasters or health shocks. Without mitigating these risks as well—through interventions such as crop insurance and access to better health care—the poor will not find a stable economic foundation in spite of good stewardship of their ecosystem assets.

Likewise, access to technology is another important factor we have only lightly touched on. Many examples show that innovations in technology and management practices have the potential to increase environmental income substantially, but there are considerable barriers to adoption of such innovations. For example, researchers in Brazil have found that a combination of planting legumes to enrich pasture soils and using solar-powered electric fences to better control where cattle graze on a given pasture could allow smallholders to sustainably double milk production and triple the carrying capacity of their land, bringing a marked increase in profits. But lack of credit and training, distance from markets, and lack of political commitment to extension programs means that few Brazilian farmers are likely to benefit from these innovations. Under the present economic incentives, poor farmers are likely to continue with their usual practices (Chater 2003:3).

This brings up the larger point that rural enterprises, although they may be physically remote, are connected to the national economy—and increasingly to the global economy—and therefore subject to macroeconomic and governance policies originating far from the village level. (*See Box 4.5.*) Without pro-poor policy changes at these higher levels, the ability of the poor to deploy their ecosystem resources for greater income will be greatly attenuated. For example, national fisheries ministries typically concentrate their attention and



budgets on industrial fisheries, ignoring the small-scale fisheries that the poor rely on. Without changing this dynamic, the poor will find their attempts at better ecosystem management frustrated by official inattention. Likewise, without high-level action to make credit and other financial services available for small rural enterprises, the poor will find it hard to capitalize on their governance and management successes.

On the other hand, this chapter shows that governments can create a foundation for greater environmental income by providing incentives for nature-based enterprises, empowering the poor by granting legally binding resource rights, and fostering responsive local institutions. In fact, as the case studies in Chapter 5 show, a high-level political commitment to expanding environmental income through local empowerment is crucial to scaling up village-level successes. When this happens, region-wide improvements in management practice and governance can occur that provide the poor a first step in economic advancement. 🐟

BOX 4.5 GLOBALIZATION, GOVERNANCE, AND POVERTY

THE CURRENT WAVE OF ECONOMIC GLOBALIZATION has lifted many people out of poverty and enhanced human welfare. But the benefits of globalization have not yet reached far enough: over three billion people still live impoverished lives, and the fields, fisheries, forests, and waterways they depend on are increasingly at risk.

As the Millennium Ecosystem Assessment points out, the transformation of ecosystems over the past five decades dwarfs the cumulative impact over the preceding centuries. This degradation is undercutting rural livelihoods (MA 2005:2). Half of all jobs worldwide depend on agriculture, forestry, and fishing. Yet agricultural subsidies and other import restrictions in developed countries make it difficult for developing country farmers to compete on the world market (WTO 2003:10, 22).

Improving this situation will require better and smarter globalization. Ultimately, a sophisticated market economy is the only mechanism capable of generating lasting prosperity. Market-based approaches, where informed by socially and environmentally responsible public policy, have also been effective in forging solutions to some environmental problems. Emissions trading has been successful in reducing sulfur dioxide and nitrogen oxides, and tradable fishing quotas have reduced over-fishing (Aulisi et al. 2005:11; Kura et al. 2004:92; Ellerman et al. 2000:315; NRC 1999:192). Innovative approaches are being used to assign value, and hence to protect, “ecosystem services”—from crops and fisheries to water filtration and flood prevention. All of these need to happen in ways that rural people can participate in and benefit from—which will only happen if they have a degree of control over the process and the ecosystem “assets.”

The public equity markets steer billions of dollars every day to companies and projects around the world. While often inadvertent, this allocation of capital all too often hastens the loss of forests, fisheries, and watersheds, and underwrites the build-up of greenhouse gases in the atmosphere. To counter this trend, many private banks have committed to the “Equator Principles,” which incorporate social and environmental criteria in investment decision-making. Major corporations are investing in environmentally cleaner technology because they are convinced it will increase their profits and make them more internationally competitive. In the energy sector, the International Energy Agency estimates that US\$16 trillion will be required for global infrastructure investment over the next twenty-five years (IEA 2004:383). Redirecting this massive capital flow to clean energy and transport systems could reduce poverty, increase security, and stabilize greenhouse gas emissions.

To be pro-poor, investors and borrowers need to incorporate environmental sustainability in their activities. The developers of power, oil, gas, and mining projects will need to do a better job of managing

risks to human health, as well as damage to rivers, fisheries, and other ecosystems. Borrowers from the Equator banks may have to drop or change their plans to meet environmental standards, as was done in many of ABN AMRO’s projects last year. However, while steering private investment in pro-poor directions is critical, it cannot achieve the desired outcome where bad governance is pervasive.

Private investment in hydrocarbons and other extractive industries has sometimes been associated with corruption, environmental degradation, social dislocation, and impoverishment. Changing this will require more transparency, public participation, and accountability. The Extractive Industries Transparency Initiative (EITI), launched by the British government, is already proving successful. Royal Dutch Shell and BP have agreed to disclose detailed payment information on their oil operations in Nigeria and Azerbaijan, respectively. Investors representing over US\$7 trillion have endorsed EITI, and civil-society organizations are using EITI as an instrument for government accountability. Endorsement of EITI by G-8 nations and oil-producing countries would make a decisive difference to the lives of the poor who live in the 60 countries that depend on oil, gas, and mining revenues (Soros 2005:43).

Economic globalization has led to a host of technologies that can aid efficient market functioning, promote sound governance of natural resources, and protect the interests of the poor. Low-cost environmental data collection using remote sensing and high-resolution satellite mapping is one example. Tracking and monitoring devices are helping to reduce over-exploitation of fisheries. In Malaysia conservationists use satellite transmitters to keep count of elephants (WWF 2005). Rural Indian farmers with high-speed Internet receive online updates about market prices and weather, making them more competitive (Annamalai and Rao 2003:1). Increasingly low-cost and accessible technologies are beginning to measure trends in deforestation, soil erosion, and climate change. India, China, and Brazil have launched their own satellites, and are sharing data with other developing countries. Hopefully, it will not be long before existing databases—including poverty maps and maps of ecosystem services—can be overlaid routinely on the sites of proposed mining operations, timber harvests, or industrial plants to identify how these developments might affect poor families in the region.

A smarter approach to economic globalization can work when the poor are empowered through access to information, participation, and justice, and when they have legally recognized resource rights that allow them to manage, sell, rent, and invest in ecosystem services. By partnering with the private sector to make credit available for ecosystem-based enterprises, and by improving the marketing and transport of goods produced, the poor can gain income and benefit from the wider marketplace that globalization affords. 