For many of the 1.2 billion people living in severe poverty, nature has always been a daily lifeline—an asset for those with few other material assets.

THE WEALTH OF THE POOR

ECOSYSTEMS ARE—OR CAN BE—THE WEALTH OF THE POOR. For many of the 1.1 billion people living in severe poverty, nature is a daily lifeline—an asset for those with few other material means. This is especially true for the rural poor, who comprise three-quarters of all poor households worldwide. Harvests from forests, fisheries, and farm fields are a primary source of rural income, and a fall-back when other sources of employment falter. But programs to reduce poverty often fail to account for the important link between environment and the livelihoods of the rural poor. As a consequence, the full potential of ecosystems as a wealth-creating asset for the poor—not just a survival mechanism—has yet to be tapped.

The thesis of *World Resources 2005* is that income from ecosystems—what we call *environmental income*—can act as a fundamental stepping stone in the economic empowerment of the rural poor. This requires that the poor manage ecosystems so that they support stable productivity over time. Productive ecosystems are the basis of a sustainable income stream from nature.

But for the poor to tap that income, they must be able to reap the benefits of their good stewardship. Unfortunately, the poor are rarely in such a position of power over natural resources. An array of governance failures typically intervene: lack of legal ownership and access to ecosystems, political marginalization, and exclusion from the decisions that affect how these ecosystems are managed. Without addressing these failures, there is little chance of using the economic potential of ecosystems to reduce rural poverty. In other words, unlocking the wealth of nature for poverty reduction requires both better ecosystem management and better governance.

Nature, Power, and the Poor

The goal of this report is to highlight the vital role of ecosystems and their governance—of nature and power—in poverty reduction. The report's central question is: Who controls ecosystems, and how can this control be reconfigured to allow the poor to use their natural assets as sustainable sources of wealth creation, vehicles of political empowerment, and avenues of integration into the national and global economies?

Making governance more friendly to the poor means tackling issues of property rights, access to information and decision-making, adequate representation, institutional transparency, and fairness in sharing the costs and benefits of resource management. These are all aspects of *democratic governance*—decision-making that respects the rights and needs of those who depend on resources. For the poor, democratic governance is the door to equity and one of the building blocks of sustainability.

This fusion of ecosystem management and good governance is also necessary to achieve the Millennium Development Goals, the set of eight goals adopted by the international community in 2000 to address world poverty. As the foundation of rural livelihoods, ecosystems are central to real progress toward the health, nutrition, sanitation, and environmental targets embedded in the Millennium Development Goals. Indeed, without empowering the poor to responsibly manage their environment for economic gain, we cannot effectively attend to rural poverty in its many dimensions.

DEFINING ECOSYSTEMS AND GOVERNANCE

An ecosystem is a community of interacting organisms and the physical environment they live in. We know ecosystems as the forests, grasslands, wetlands, deserts, coral reefs, rivers, estuaries, and other living environments that surround us. They also include the farms, pastures, and rangelands—collectively known as agroecosystems—that feed us. They are the earth's living engines of production, providing the goods and services—air, food, fiber, water, aesthetics, and spiritual values—that make life possible for rich and poor alike.

In *World Resources 2000-2001: People and Ecosystems—The Fraying Web of Life,* we explored the threats to global ecosystems and stressed the need to adopt an "ecosystem approach" to environmental management. *View the report online at http://www.wri.org*

Governance is the exercise of authority—the decisions, regulations, and enforcement that determine how we will act and who will benefit. It encompasses the laws, institutions (such as government agencies or village councils), and decision-making processes that embody this authority. **Democratic governance** implies the participation of those who are governed in the decision-making process—either directly, through representatives, or both.

In *World Resources 2002-2004: Decisions for the Earth—Balance, Voice, and Power,* we showed how the conditions and quality of governance influence our environmental decisions, and stressed that good governance that ensures adequate representation, access to information, and public participation is crucial to the sustainable and equitable management of ecosystems. *View the report online at http://www.wri.org*

In *World Resources 2005,* we argue that prudent ecosystem management, enabled by pro-poor governance, can reduce poverty. Without attention to poverty, the goal of sustainable development recedes beyond reach.

Linking Ecosystems, Governance, and Poverty

Ecosystem management, democratic governance, and poverty reduction are each essential elements of sustainable economic growth. Moreover, these elements are inextricably linked. More than 1.3 billion people depend on fisheries, forests, and agriculture for employment—close to half of all jobs worldwide. This dependence of livelihoods on natural systems is nowhere more important than among the rural poor. *(See Table 1.1.)* In Africa, more than seven in ten poor people live in rural regions, with most engaged in resource-dependent activities, such as small-scale farming, livestock production, fishing, hunting, artisanal mining, and logging. This small-scale production accounts for a significant percentage of the GDP of many African nations.

Making wise choices about the use of natural resources and the distribution of environmental benefits and costs is central to maximizing the contribution that a nation's resource endowment makes to social and economic development. Many of the poorest regions of the world are, however, also the least democratic. That means much of their resource wealth is typically diverted from poor communities through corruption, mismanagement, and political patronage. It is no coincidence that fundamental democratic principles such as transparency, public participation, accountability, and the separation of legislative, judicial, and executive powers are often absent in developing countries where poverty is greatest.

Many people in developing countries are thus not only poor, they are voiceless. Dependent directly on natural resources, they have little say in how those resources are used, but suffer the consequences when the decisions are corrupt and the use is destructive. For example, rural peoples' livelihoods are often in direct conflict with extractive industries like large-scale fishing, logging, or mining, but they have little say in resolving that conflict. Access to decision-makers—government bureaucrats, lawmakers, corporations, or the courts—is typically for the powerful, not the poor.

Rectifying this imbalance means supporting democratic practices. History shows, however, that efforts to promote democratic principles in a vacuum rarely succeed. To take root, they must engage citizens, and they must deliver on matters that are immediate and important to citizens. As the source of livelihoods, the environment is arguably the most important issue that democracy must deliver on in the developing world. Put differently, the environment is not only a powerful tool for promoting democratic reform, but good environmental governance is fundamental to strengthening and consolidating democracy. Democratic institutions, in turn, are an important factor supporting strong economic growth.

This emphasis on good governance and environment is particularly relevant when addressing poverty. The case studies in this report and the experiences of an increasing number of villages and communities in many nations suggest that efforts to promote sustainable livelihoods among the poor are more successful when they simultaneously promote ecosystem stewardship and democratic governance. For that reason, a number of development agencies and nongovernmental organizations (NGOs) are beginning to focus on this integration of environment and governance.

In spite of increasing interest in this integration, its application to the alleviation of poverty is still new. Success will demand an openness to go beyond traditional economic development strategies, or at least to add a more deliberate recognition of the linkages between nature, power, and poverty.

TABLE 1 ECOSYSTEMS BRING JOBS

Percent of Global Workforce Employed in Agriculture, Fisheries, and Forestry, 2001

Region/Country	Percent of Active Workforce
WORLD	44
DEVELOPED COUNTRIES	7
DEVELOPING COUNTRIES	54
ASIA AND PACIFIC	60
Cambodia	70
China	67
India	59
Nepal	93
LATIN AMERICA AND THE CARIBBEAN	19
Bolivia	44
Guatemala	45
Haiti	62
NEAR EAST AND NORTH AFRICA	33
Afghanistan	67
Turkey	45
Yemen	50
SUB-SAHARAN AFRICA	62
Burkina Faso	92
Ethiopia	82
Niger	88
Tanzania	80
COUNTRIES IN TRANSITION	15
Albania	48
Azerbaijan	26
Tajikistan	33

Environment Matters to the Poor

Since the Rio Earth Summit in 1992, the importance of a sound environment to sustainable livelihoods has been widely acknowledged, particularly for the rural poor in Africa, Asia, and Latin America.

Natural Resources Play a Vital Role in the Livelihoods of the Poor

Poor rural families make a living from a variety of income sources and subsistence activities. Many of these are directly based on nature—things like small-scale farming and livestock rearing, fishing, hunting, and collecting of firewood, herbs, or other natural products. These may be sold for cash or used directly for food, heat, building materials, or a thousand other household needs. This "environmental income" supplements other income sources such as wage labor and remittances from family members who have emigrated. The decline of natural systems through soil depletion, deforestation, overexploitation, and pollution represents a direct threat to nature-based income and contributes to increasing poverty.

Defining and Quantifying Environmental Income

Environmental income is the income generated from ecosystem goods and services. It includes income from natural systems such as forests, grasslands, lakes, and marine waters (what we refer to as "wild income"). It also includes agricultural income—the output of agroecosystems. Both these sources of environmental income are crucial to rural livelihoods.

THE COMPONENTS OF ENVIRONMENTAL INCOME

Environmental Income is the value derived—in cash or direct use—from ecosystem goods and services. As we use the term in this report, environmental income is the sum of two important income streams.

- **Wild Income:** Income from wild or uncultivated natural systems, such as forests, marine and inland fisheries, reefs, wetlands, and grasslands. This includes commodities such as fish, timber, and nontimber forest products such as fuelwood, game, medicinals, fruits and other foods, and materials for handicrafts or art. It also includes income from nature-based tourism, as well as payments that rural landowners might receive for environmental services such as carbon storage or preservation of watershed functions.

- **Agricultural Income:** Income from agroecosystems—all agricultural lands, such as croplands, pastures, or orchards. In the context of the poor, agricultural income is mostly generated through smallscale agriculture, including commodity crops, home gardens, and large and small livestock. Income from aquaculture would also fit in this category.

Ecosystems have several characteristics that make them attractive as a source of income. Environmental resources are renewable, widespread, and they are often found in common property areas where the poor can access them without owning the land. In addition, exploiting natural systems often can be done with little need for investment or expensive equipment—an important consideration for poor families with limited assets and investment flexibility.

How important is environmental income to the poor? William Cavendish's study of 30 villages in the Shindi ward of Zimbabwe in the late 1990s provides a glimpse into the near-universal importance of environmental income to poor households. Cavendish's survey of nearly 200 households excluded farm income, concentrating on income from forests and other natural sources, particularly common areas in the public domain. He found that this kind of environmental income constituted over 35 percent of total household income. It was not usually obtained from one source, but many small sources combined. Households derived direct subsistence value from collecting firewood, consuming fruits and berries, and browsing their livestock. They got cash income from the sale of materials, fruits, medicines, or meat they had collected or hunted. Cavendish also found that the dependence of households on environmental income decreased as their average incomes rose. Although the poor tended to get more of their total income from the environment, the rich still made heavy use of natural products for income.

Other studies confirm Cavendish's general findings. Subsistence use represents the greater part of the value of these natural products to households. Home use of wild products represents a direct reduction in cash expenditures of households—a form of income that is essential to the survival of the very poor.

But wild products are also a considerable source of cash income. In the Indian state of Kerala, residents in the Wayanand district sell wild foods such as honey and mushrooms, along with coveted gooseberries and other medicinal plants, earning an annual average of Rs. 3,500 (US$75) per household.

Although the value of many wild products seems small when considered in isolation, their aggregate value can be substantial, and their contribution to rural economies crucial. In South Africa, researchers estimated the value of wild products extracted by households in the savanna biome alone at 8 billion Rand (US$1.3 billion) per year—a figure that works out to about R750-1,000 (US$120-$160) per hectare of accessible land. That compares favorably with the economic productivity of cattle ranching and plantation forestry in these areas. However, these economic contributions belong to the informal economy, and are generally unaccounted for in official economic statistics.

Although the value of many wild products seems small when considered in isolation, their aggregate value can be substantial, and often compares favorably with other commercial ecosystem uses such as cattle ranching or plantation forestry.

TABLE 2 THE VALUE OF HOME GARDENS TO HOUSEHOLDS IN BUSHBUCKRIDGE, SOUTH AFRICA, 1996

Crop	Cash Equivalent for Crops Consumed at Home (Rand)*	Cash Value of Crops Sold (Rand)*
Bean	57	4
Cabbage	445	46
Cassava	296	10
Cauliflower	100	0
Chili	48	13
Dintlo	124	109
Ground nut	184	41
Madanda	60	0
Maize	267	42
Onion	30	10
Pumpkin	52	0
Spinach	92	24
Sugar cane	277	217
Sweet potato	175	7
Tomato	126	0
Water melon	35	0

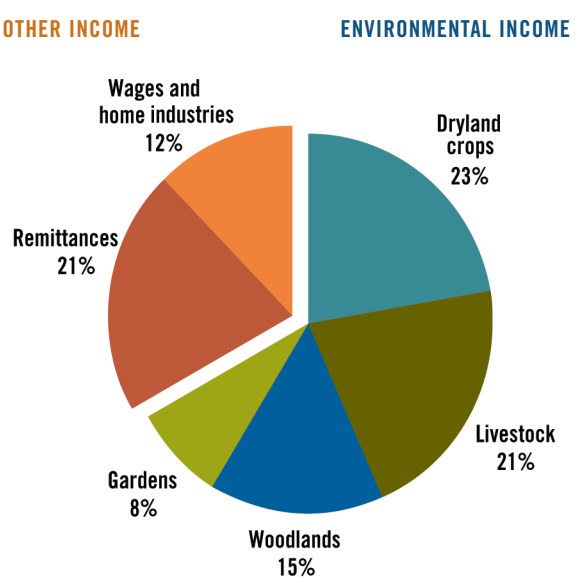
*Average income of households cultivating each crop

Adding In Agricultural Income

Income from wild products is only a part of the environmental income equation. Agricultural income is just as crucial. Only when income from agriculture is combined with the income from wild products do we begin to get a clear idea of how important ecosystem goods and services are as a source of rural livelihoods.

A study of households (rich and poor) in the Masvingo Province in southeastern Zimbabwe provides a good example of how agricultural income complements wild income, and how it compares with other income sources such as wages and remittances. As Figure 1 shows, agricultural income—from crops and home gardens—contributed 30 percent of total household income (cash and subsistence income combined). Livestock rearing—a modified form of agriculture that relies on wild forage—contributed another 21 percent. Wild products from woodlands contributed 15 percent. Together, these elements of environmental income sum to 66 percent of total income. In other words, *goods and services from ecosystems contribute two-thirds of family incomes in rural Zimbabwe*. The remaining 34 percent came from wage labor, income from home industries, and remittances. For the poorest of these rural households, dependence on these different kinds of environmental income is even higher, providing a full 70 percent of total income when combined.

FIGURE 1 HOUSEHOLD INCOME BY SOURCE, MASVINGO PROVINCE, ZIMBABWE



In general, the balance between agricultural income and wild income varies by location, with agriculture supplying more income in some areas, and wild income more in others.

SMALL-SCALE FISHERIES IN RURAL THAILAND

The average small-scale fisher in rural coastal Thailand earns probably half of the income of the average Thai citizen. He is from one of the almost 50,000 households in Thailand fishing with a vessel that weighs less than 10 tons. He lives in one of the 2,500 rural fishing villages around the country, 80 percent of which are located beyond municipalities, without basic infrastructure such as roads and electricity.

Building on the Strength of Ecosystems

As we have shown, environmental income is critical to the survival of the poor within the typical rural economy in developing countries. On average, income from small-scale agriculture and the collection of wild products such as nontimber forest products together account for some two-thirds of the household incomes of families in poverty. Without income from ecosystem goods and services, rural poverty would unquestionably be deeper and more widespread—a lesson to remember as the pace of ecosystem degradation picks up worldwide.

But as important as environmental income is to the poor today, it is typically not used as a route out of poverty. Usually, the poor use environmental income more as a support for current levels of consumption or as a safety net to keep from falling further into poverty. They generally do not have the means to use environmental income as a tool for true wealth creation. Behind this failure to capitalize on the potential of ecosystems for income is an array of governance failures. The challenge is to alter this equation, increasing the access of the poor to local ecosystem potential and their capacity for managing this potential sustainably and profitably, with viable models for turning nature's productivity into income.

Essential to meeting this challenge is realizing that environmental income is not separate from but part and parcel of today's rural economies. Helping the poor to increase their environmental income, then, must be seen as supporting rural economic growth more generally. It both widens and secures the range of income options available, and can support a transition to higher-paying employment that carries the poor beyond the subsistence level.

As important as environmental income is to the poor, they typically use such income more for survival than for true wealth creation.

Better Governance is Vital for Higher Incomes

An abundance of natural resources does not necessarily translate into wealth for the poor. To make nature a source of prosperity for poor communities requires supportive governance conditions: policies and laws that protect the rights of the poor, coupled with responsive institutions that promote their interests. Without these, the presence of high-value resources like timber, gold, diamonds, or oil can actually be detrimental to poor communities, providing a target for exploitation by outside business interests and politicians. Too often, the result is that most of the revenues are appropriated by others, leaving the community—and local ecosystems—worse off than they were prior to "development."

Even where high-value resources are not present, the patterns and institutions of governance are usually the critical factor determining how effectively the poor can harness ecosystems for their livelihoods. Where laws are biased against the poor and government practices disenfranchise them, the potential for better management of ecosystems to alleviate poverty is greatly diminished.

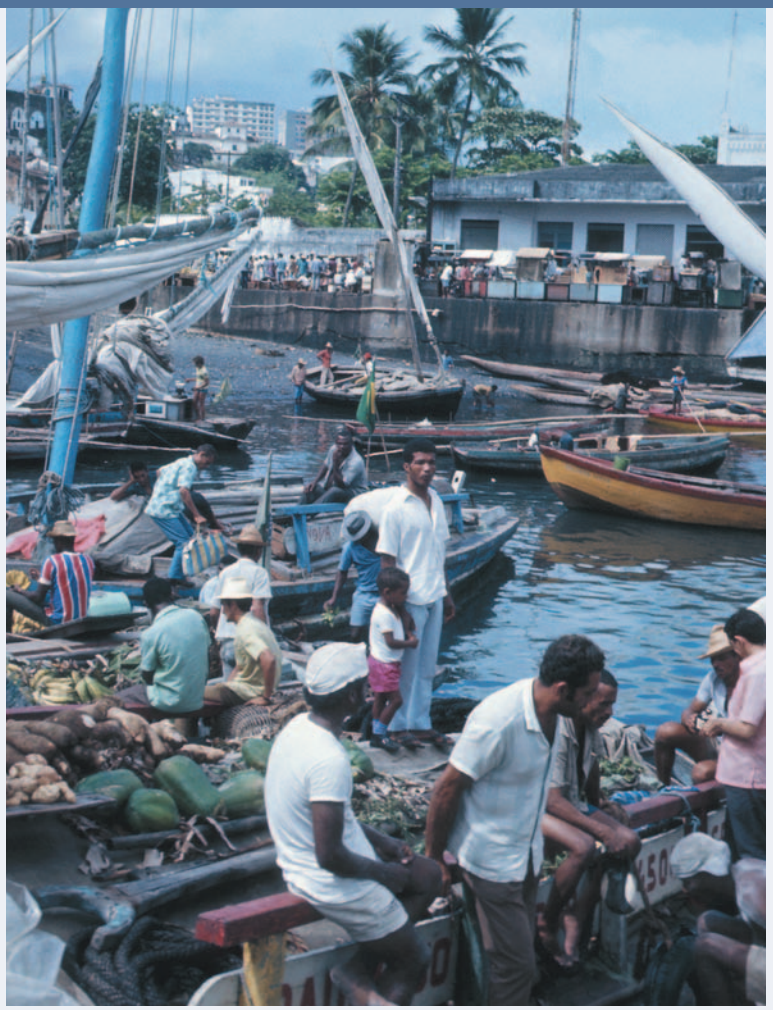
The patterns and institutions of governance are the critical factors determining how effectively the poor can harness ecosystems for their livelihoods.

Tenure Security is a Primary Obstacle

Ownership and access are the most fundamental keys to the wealth of nature. Unfortunately, many poor people do not own the land or fishing grounds they rely on for environmental income. This lack of secure tenure makes them vulnerable to being dispossessed of their homes and livelihoods, or, if they rent homes or land, subject to sometimes exorbitant rent payments.

The importance of tenure—or the lack of it—to the ability to tap nature's wealth can't be stressed too much. The rights to exploit, sell, or bar others from using a resource—the bundle of rights associated with tenure or ownership—are essential to legal commerce. Ownership also provides an incentive to manage ecosystems sustainably by assuring that an owner will be able to capture the benefits of long-term investments like soil improvements, tree planting, or restricting fishing seasons to keep fish stocks viable.

Tenure issues affecting the poor involve not only private ownership of land, but also the use of common lands. Many areas under state ownership provide the resource base for poor communities, but these communities often have no legal basis for their use of common pool resources. In many instances, these resources—whether they are forests, grazing areas, or fishing grounds—have been governed locally for centuries under traditional forms of "communal tenure," in which resources are owned in common by a group of individuals, such as a village or tribe.



Unfortunately, such customary arrangements are often not legally recognized, and conflicts between communal tenure and modern state-recognized ownership frequently threaten rural livelihoods. State recognition of such traditional ownership arrangements or new power-sharing agreements between local communities and the state that grant specific rights to use and profit from the state commons are often important ingredients in successful efforts to tap the wealth of natural systems.

Lack of Voice, Participation, and Representation

When important decisions about local resources are made, the poor are rarely heard or their interests represented. Often these decisions, such as the awarding of a timber concession on state forest land that may be occupied by poor households, are made in the state capitol or in venues far removed from rural life. Even if they could make it to these decision-making venues, the poor—and other rural residents as well—would still be unlikely to find a seat at the table. The right for local resource users to participate in resource decisions is still a relatively new concept in most areas and often not embodied in law. Language barriers, ignorance of their legal rights, and a lack of full information

about how resource decisions are likely to affect them are also potent obstacles to the participation of the poor. Lack of money, of political connections, and of lawyers or other advocates who can articulate their needs are all sources of political isolation and marginalization.

The Wealthy Dominate the Economic Machinery

Wealthier landowners and traders tend to dominate the resources and economic tools necessary to turn natural resources to wealth. In addition to owning more and better land, livestock, farm machinery, boats, or other assets directly relevant to profiting from ecosystems, the rich also tend to have greater access to resources like irrigation water, seed, fertilizers, pest control, and labor. The wealthy also have easier access to credit, which is a key constraint for the poor wishing to improve their ecosystem assets by planting trees, undertaking soil or water conservation projects, or developing new products or markets. These advantages are often magnified by the dense and interlinked social networks in rural areas, which tend to reinforce the near-monopoly position enjoyed by some wealthier families.

Capture of State-Owned Natural Resources by the Elite—Facilitated by Corruption

In many cases, state-owned resources like forests and fisheries are opened to exploitation by granting individuals or companies concessional leases or harvest licenses. The wealthy are much more likely to be able to take advantage of these. In Bangladesh, the government leases rights to fish in state-owned water bodies for a period of one to three years through a public auctioning system that generates considerable revenue for the state. Unfortunately, poor fishermen can rarely afford to bid, so the licenses are purchased by rich investors known as "waterlords." These entrepreneurs hire fishermen as daily laborers at low wages, keeping most of the profits for themselves. This has led, in effect, to the institutionalized exploitation of the fishermen by a small rural elite. In other instances, lease holders will exclude the poor altogether from their concession, even though they may have traditionally lived on and collected from these lands.

This problem of the capture of state resources by the elite is worsened by corruption, political patronage, and sweetheart deals for insiders. Such corruption and favoritism often focuses on natural resource concessions in remote areas far from official concern and public scrutiny—precisely those areas inhabited by the poor. In 2001, Bob Hasan, Indonesia's former Minister of Industry and Trade, was sentenced to prison for forest-related graft worth $75 million. For years, the timber magnate and close associate of former President Suharto dominated Indonesia's lucrative plywood trade, at one point controlling nearly 60 percent of world tropical plywood exports.

Apart from its role in enabling the elite capture of state resources, corruption also stands as a fundamental obstacle to the sustainable management of resources and thus another way in which the natural assets of the poor are diminished. Illegal logging and fishing are prime causes of the depletion of common property resources that the poor depend on, short-circuiting effective state management of ecosystems and undermining customary management arrangements at the village or tribal level as well.

Four Steps to Greater Environmental Income for the Poor

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 under the right conditions there is great potential for this component to grow, contributing to higher household incomes that lessen poverty. Four crucial steps can help bring about the conditions for wealth creation:

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 that the poor tend to rely on.

Better Management Requires an Ecosystem Approach

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 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. When we refer to "better ecosystem management," we mean adopting an "ecosystem approach."

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 macro structure, 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 nicely illustrates the potential for higher agricultural income. All four villages had participated in government-supported projects from 1995-2001 to better manage their degraded watersheds. 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.

Thanks to these measures, groundwater levels recovered, 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 in a major way, both on irrigated and non-irrigated 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.

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 just 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.

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

Lack of access—physical, political, and financial—is a critical roadblock to the use of ecosystems for poverty reduction. Removing this roadblock requires empowering the poor with resource rights. Two governance improvements are key to this effort: improvements in tenure security; and devolution of authority over nature to more local levels where the poor reside (decentralization).

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. That 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.

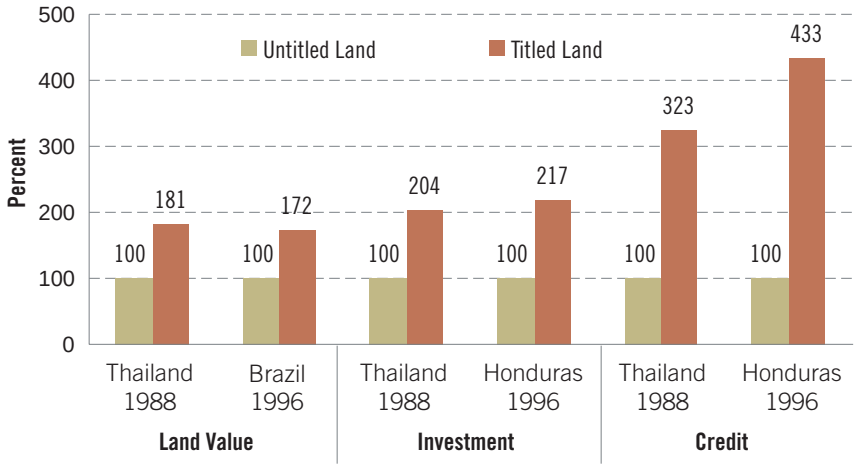
Recognition of Traditional Rights

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 recognizing 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. For example, 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).

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 have been surveyed and accurately mapped by the state. Further, the state has begun granting local communities the right to draw up their own management plans for these customary use areas, with the aim of restoring these fisheries as a community asset.

As this example shows, increasing security of tenure for the poor does not always require gaining full title or private ownership of land or resources. 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. 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.

FIGURE 2 EFFECT OF LAND TITLING ON LAND VALUE, INVESTMENT, AND CREDIT



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.

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 conducting participatory rural appraisals or 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.

One of the most progressive and potentially poor-friendly manifestations of decentralization is community-based natural resource management (CBNRM). When carefully undertaken, community-based management can be inclusive enough to

involve the poor and effective enough to generate increases in environmental income. 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:

■ **Account for the Costs of CBNRM.** 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. 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. Offering wage labor to try to offset the income loss is one common way to mitigate this cost. Staging the restoration of common areas so that they are not all closed at once, but in rotation, may also be useful. Another approach is to provide extra services specifically to poor families, such as training in skills that open other employment options.

■ **Assure Equity in Benefits Sharing.** Richer families usually hold a structural advantage in capturing the benefits from good ecosystem management. They own more and better land that will benefit from better farming practices, have more boats to capture restored fisheries, or have more cattle to take advantage of restored pastures. Given this structural advantage, developing mechanisms to share benefits 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 of the economic value of these benefits.

■ **Acknowledge the Limits of Participation.** Few communities are homogeneous; most 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. Assuring true participation for the poor requires considerable institution-building so that mechanisms of inclusion can gradually work against these 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. 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.

3 COMMERCIALIZING ECOSYSTEM GOODS AND SERVICES

Success at commercializing 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. There are several important elements to successful commercialization:

■ **Provide Marketing Assistance.** Perfecting the production of nature-based goods and services is important, but the marketing process is just as important, and often a greater obstacle. 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

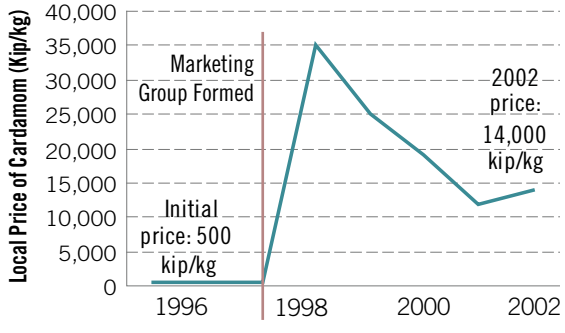
weaving materials, honey, bamboo, and bark into successful commercial ventures. Greater access to information on current market conditions and trends can help the poor target their marketing better, or repackage their products for greater consumer acceptability.

■ **Understand the Limitations of Transportation.** Rural areas are notoriously difficult to reach. 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. Fresh fruits, vegetables, fish, milk, and other perishable items are particularly subject to the limits imposed by poor transport. 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.** 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. 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. But the dimensions of the credit problem require continued progress in extending microfinance to diverse rural communities.

FIGURE 3 MARKETING GROUPS RAISE PROFITS

Influence of Village Marketing Group In Nam Pheng, Laos



■ **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. The first level is improving processing efficiency and reducing post-harvest losses. Extension programs that help the poor upgrade their small-scale processes through education and adoption of low-cost technologies can help with this. The second level is increasing their marketing power. Forming cooperatives or marketing groups is a common route to achieving greater market power and avoiding middlemen. 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. The third level is adopting 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, and can offer a route into lucrative First World markets.

■ **Partner With the Private Sector.** The capital, facilities, know-how, and markets that large businesses command make them strong potential investors and partners for nature-based enterprises of the poor. For poor households, the benefits of partnering with private business interests like lumber companies or agricultural firms can include a more consistent income stream, 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. The obvious benefits to companies are access to raw resources that the poor control, 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 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.

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 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*—have begun to develop worldwide. 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.

The obstacles to including the poor in PES programs mirror many of the problems holding them back from other forms of environmental income: lack of tenure and formal titles, which are usually used to identify those eligible for PES payments; restrictions on the uses of lands (such as no grazing or agroforestry) for which PES payments are given; high costs for registering or participating in PES programs; and lack of credit or start-up funds.

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. It is no coincidence that many of the governance changes advocated in this report as pro-poor, such as establishing secure tenure and promoting community-based institutions that can collectively bargain for and represent the interests of poor, are the same governance changes necessary to make PES programs better at poverty reduction.