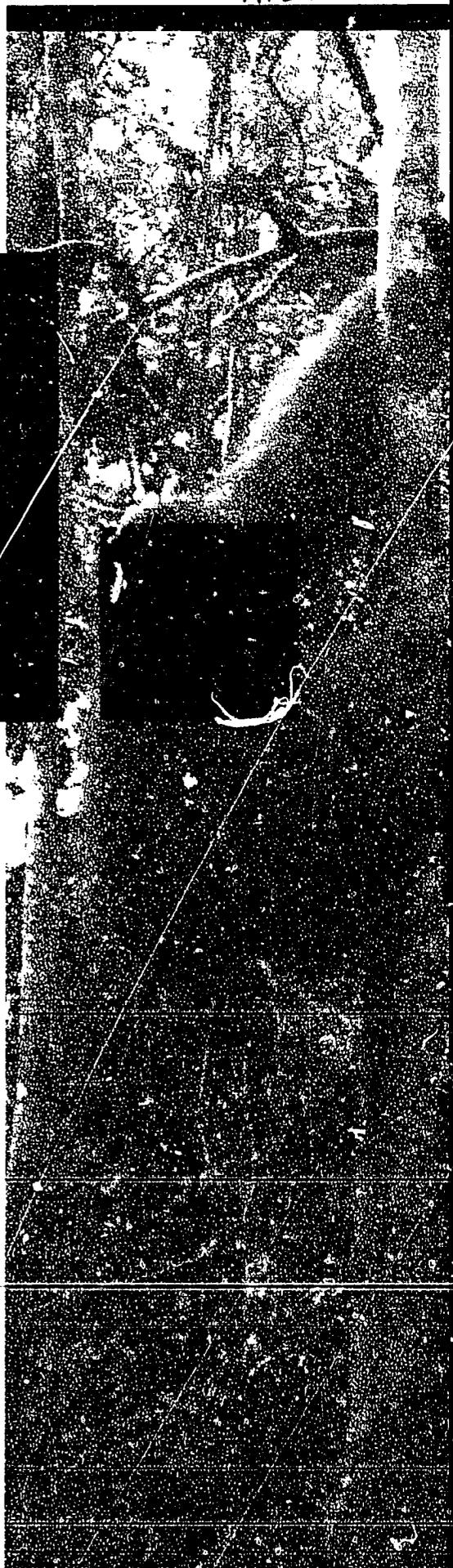
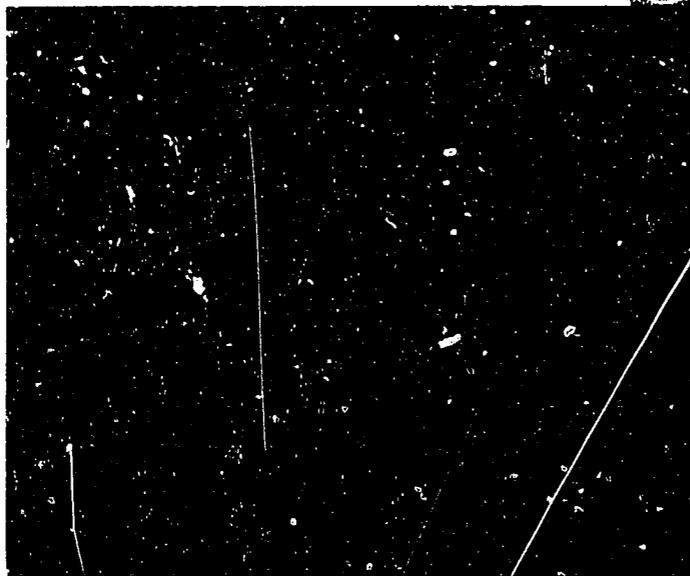


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**COMMUNITIES AND
SUSTAINABLE FORESTRY
IN DEVELOPING COUNTRIES**

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May 1994

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ACKNOWLEDGEMENTS

The idea for a project presenting the basic design principles for community forestry management in developing countries came out of a meeting of the advisory board of the International Center for Self-Governance (ICSG), a unit of the Institute for Contemporary Studies (ICS). The ICS has been a pioneer in pragmatic and level-headed analysis and study of public policies in developing countries. Under the able leadership of Elise Paylan Schoux, the ICSG has combined this pragmatism with the crucial idea of community self-empowerment. Inspired by earlier ICSG publications, including Elinor Ostrom's *Crafting Institutions for Self-Governing Irrigation Systems* (ICS Press, 1992), this project was launched in the hope that the issues of community organization, risk-reducing business strategies, government relations with communities, and sustainable forestry development could be merged and conveyed in a coherent, straightforward fashion. The goal is to make these issues accessible especially to community-group leaders and government officials.

The broad project, undertaken by the author and Professor Marie Lynn Miranda, also of Duke University's Center for International Development Research, was funded by the ICSG and Duke University's Center for Tropical Conservation. The financial support of the U.S. Agency for International Development, which funds both the ICSG and Duke's Center for Tropical Conservation, is gratefully acknowledged. More technical and detailed publications undertaken by Professor Miranda and other project participants will be disseminated through other channels.

This project has resulted in this *CTC Report* and a book, entitled *Communities and Sustainable Forestry in Developing Countries*, which this report summarizes. Both pieces try to merge design principles with the real-world experiences

of forest users. The actual cases are the heart of the effort. Therefore, the corps of researchers who contributed case study analyses and other research assistance to this project proved invaluable. They were Anjali Acharya, Maya Ajmera, Christopher Jones, Catherine Karr, and Sonal Tejani.

In June 1993, the ICSG and Duke's Center for International Development Research co-sponsored a symposium on "Communities and Sustainable Forestry." The symposium was organized to discuss the challenges of community forestry management. The contributions of the symposium participants, Gustavo Arcia (Research Triangle Institute), Mimi Becker (Duke University), Shawn Bennet (Organization for Tropical Studies), David Bray (Inter-American Foundation), Garry Brewer (University of Michigan), Fred Cabbage (U.S. Forest Service), Karlyn Eckman (University of Minnesota), Sam Harper (ICS), Robert Hawkins (ICS), Kevin Healey (Inter-American Foundation), Robert Healy (Duke University), Julie Johnson (Duke University), Jan Laarman (North Carolina State University), Owen Lynch (World Resources Institute), Elise Paylan Schoux (ICSG), Priya Shyamsundar (Duke University), Elizabeth Station (Duke University), Toddi Steelman (Duke University), Carel van Schaik (Duke University), Christopher Welna (Duke University), and Mary Young (Research Triangle Institute) may be more worthy of publication than the book. The feedback from the symposium participants was extremely important for increasing attention to the issues of forest user rights, environmental effects, and the risks of long-term forest development. Thoughtful comments on earlier drafts were also provided by Elinor Ostrom (Indiana University) and Anthony Pryor (USAID).

Despite all of these contributions, the errors and interpretations remain the responsibility of the author.

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COMMUNITIES AND SUSTAINABLE FORESTRY

The survival and quality of forests in most developing countries depend on the strength of community forestry organizations formed by the people traditionally involved in forest use. These organizations, with assistance—rather than control—from the government, are essential for promoting forest development and limiting forest extraction.

While it is on the rise, community-controlled forestry is still unconventional in most developing countries. However, unconventional approaches are necessary because both governmental and private control over natural forests have led to the rapid disappearance of these forests. The overall statistics—that the world's forests shrunk at a rate of 1.8% between the late 1970s and the late 1980s¹—obscure even more dramatic deforestation in many developing countries and even greater declines in the availability of marketable timber, fuelwood, and foods. Demand for timber, agricultural land, and pastures has put enormous pressure on the forests. The apparent alternative of state or private plantations has failed in many countries, for both economic and physical reasons. At the same time, government efforts to induce people to plant trees often fail because government incentives are not sufficient to prevent inappropriate deforestation or to fulfill expectations of government-sponsored replanting. New approaches that address people's motivations to develop and nurture forests responsibly are clearly needed.

Communities and Sustainability

Local people with established patterns of forest use are the key to sustainability. To be most

effective, the local people must organize themselves into well-defined community groups.

Local people are often the most appropriate managers and regulators of forest uses for four reasons. First, limiting the number of users can reduce the pressure on the forest resource. Traditional forest users are typically few in number compared to the total number of potential forest users, and the intensity of traditional forest uses is usually modest or moderate. "Community forestry" should mean the control over forest uses by a more-or-less well-defined group of people claiming customary use rights, not that everyone in a particular geographical area has access to the forest resources.

Second, traditional forest users living in or near the forest site have an interest in the long-term sustainability of that forest, as long as they know that they will be able to continue to enjoy the benefits of the forest. Given that traditional users depend on the forest for at least a portion of their income, they will be more likely to guard the long-term future of the resources.

Third, if the government permits local forest users to police the forest, then effective regulation has a real chance. The government can rarely do so itself, due to chronic shortages in funding and staff. With government regulation, people intent on encroaching into the forest know that they run the risk of facing only a few government forest guards; with community forestry, invaders run the risk of facing a whole community mobilized to protect its forest-use rights.

Fourth, traditional forest users are generally more likely to have developed practices that are compatible with the long-term survival of the forest. Other groups, less familiar with the

forest, are more likely to engage in short-sighted practices.

Who Are the Forest Users?

Whether community control of forests is fair and effective depends on who the forest users are and whether they have appropriate incentives and capabilities to safeguard the forests and smaller stands of trees. Even this incomplete list shows how diverse the users of forest resources can be:

- timber cutters
- forest plantation workers
- community woodlot overseers
- gatherers of poles from immature trees
- fuelwood gatherers
- xate-palm gatherers in the Peten (northeastern) region of Guatemala (*xateros*)
- pine resin tappers
- durian fruit gatherers
- gum acacia (*chicle*) tappers in Central America (*chicleros*)
- rubber-tree tappers
- tourist guides—and tourists
- game hunters
- Brazil nut gatherers
- herders
- corn planters
- cassava (or manioc) growers
- prospectors and miners

General Characteristics of Forest Users and their Predicament

Despite the diversity of people working with forest resources, there are some general characteristics of forest users. First, most forest users rely on the forest for only part of their

income. Forest users are often engaged more intensively in other productive activities, such as farming, while their exploitation of forest resources is seasonal or occasional. For example, Honduran resin tappers are typically smallholder farmers who spend only two to three days a week during the six-month tapping season to install tubes and drain cups and collect the resin (Stanley, 1991: 31). Second, forest users generally have low incomes, with few other alternatives for earning supplemental income. Many rely on forest products to meet needs, such as fuelwood and building materials, that they cannot fulfill in the market because they lack disposable income. Third, they generally lack clear, formal property rights over the trees and the forest land, whether they are extracting timber or other forest resources. However, even without having government-sanctioned ownership, these forest users may have forest rights recognized by their communities.

These characteristics of forest users and the accompanying predicaments that forest users face therefore give rise to the following requirements in order to establish successful community management:

Individuals and groups must be motivated to grow trees, and to exploit the forest's non-timber resources, on an on-going basis. Opportunities for economic gain or contributions to meeting everyday needs are what give the forests their value in the eyes of the society and the government. Harvesting, especially if done with discipline and combined with resource development (such as replanting), can be sustainable. Successful forestry programs must therefore combine opportunities for economic gain and distribute management resources in such a way that users have an incentive to maintain the forests sustainably.

Over-use and misuse of the forest resources must be discouraged. Organization is often needed to prevent prior over-exploitation from destroying the resource base, even when exploitation has been entirely within the traditional community. For example, the palm fronds (*xate*) that grow in the Guatemalan forests are beginning to show lower densities (Salafsky, Dugelby, and Terborgh, 1993: 44). Organization may also be needed to prevent other people from using the forest resource altogether.

Collective action outside of the government is essential to encourage forest use but discourage overuse. As noted above, government regulation has often been ineffective. At the same time, community groups possess characteristics that make them more likely to be able to manage resources sustainably. Only by banding together can forest users strengthen their chances to keep others out. Pooling resources can help considerably to make current and future forest use attractive.

Government must support, rather than dominate, non-governmental collective action. Numerous cases show that government involvement is essential, but very dangerous. Governments are frequently antagonistic to non-governmental groups. This may be especially true where governments try to enrich themselves through unsustainable forest exploitation. Yet non-governmental groups cannot operate in a vacuum, because of both what the government can contribute and how many factors are inevitably under governmental control. Governments require self-discipline and a sophisticated vision in order to promote grassroots efforts rather than dictate.

USER RIGHTS, USER GROUPS, AND SUSTAINABLE FOREST MANAGEMENT

In the past century, governments have shrunk communal forest rights in favor of private ownership or state ownership. As early as 1897, for example, the government of Thailand took over control of forests in northern Thailand from the local Laotian chiefs. By the 1960s, virtually all of Thailand's forests were state-owned, with elaborate permit-based regulations for exploitation (Feeny, 1988). Yet the result has been continued deforestation, possibly worsened by the hostility of local people to the government's restrictions.

In the case of the once-lush Kumaon forests of India's Utter Pradesh state, government control was imposed in the nineteenth century. The forests initially were under the jurisdiction of the conservation-minded Forestry Department, which often enraged local people by excluding them from forest uses on land which previously had been open to them. In the 1920s, control was transferred to the Revenue Department, which favored commercial logging that brought in large royalty payments. The result was that forests were then badly abused by both the local people and commercial loggers (Tucker, 1988: 97).

Likewise, when the Honduran government declared *all* trees state property in 1974, the denial of user rights to local people resulted in widespread frustration and reactions against the government. Local people removed firewood, settled on forest land claimed by the government, and illegally burned forest land (Jones, 1988: 157-8).

In the southern African nation of Lesotho, the government also asserted its authority to control

and manage community woodlots in 1978. The government claimed a portion of the income from the woodlots which had previously gone to the communities. Antagonisms over control of forest lands and money have made reforestation efforts disappointing.

Government efforts to conserve forests through state control often fail because people do not follow the formal rules of ownership, rights, and limits. Many people outside of government, if they observe rules at all, recognize traditional or customary rights developed within communities of people of common lineage, identity, and interests. They may reject government rules as lacking moral force.

Behind the apparent issue of "illegal" activity—people not following the formal rules—lies a more basic issue of who has the right to determine who should use the forest. On the most practical level, the question is what arrangement of user rights, and what authority to decide on user rights, will improve the chances for sustainable forest use.

The distribution of user rights and authority is important for determining which users have assurances to future resources rights, and income. Communities and policymakers must be concerned about assurances of use because these assurances determine:

- how enthusiastically people will *develop* forest resources;
- how carefully people will *extract* forest resources;
- how *fairly* the income from forest resources will be shared.

Rights and Ownership

The wide range of rights that exists for any given resource has been obscured by the more common idea of *property ownership*, which implies that user rights are placed in the hands of a particular actor, whether it be an individual, family, group, company or government. In fact, when the specific rights related to forest resources are separated out, it becomes clear that in most cases "rights" are split among several actors, including government, community and individuals.² These rights include *direct* rights to:

- develop forest resources (e.g., planting trees, establishing tourist facilities);
- extract forest resources;
- sell the outputs;
- sell the rights to engage in the above activities;
- share in the income produced by forest uses.

In addition to the obvious issue of who gets access to the forest resources, there is a more complex question of who ought to have the authority to decide who gets access. Therefore, the range of rights also includes the rights to *control* forest uses by:

- deciding what forest resources will be developed;
- deciding on the rates of extraction;
- deciding on who should be allowed to extract;
- deciding on the markets and prices for outputs;
- deciding on whether resource rights can be sold and the conditions of sale.

It is rare for either individuals, communities, or the state to hold all these rights together. Individual users are usually limited in their user rights even when they are legal "owners." In South Korea, for example, the Forest

Development Law of 1970 empowered county governments to require certain landowners to devote private land to forest plantations (Gregersen, 1988: 227-29).

User rights may also make distinctions between community and individual rights for the same resource. While there are some truly communal activities, such as nut gathering, very often "communal" forests are exploited by individual community members. The difference is that the community, rather than the individual, holds the authority to control rights. For example, according to customary practice in Lesotho, cleared land in or close to the village is assigned by the village chief to adult males for agriculture, orchards, or residence. Upon the death of that male, the property reverts to the chief for reassignment (Turner, 1988: 199-203).

Lastly, formal state or government control may also be blurred when governments lease land or grant extraction concessions to companies, individuals, or communities. In these cases, many of the benefits go to the users, though the government often charges for the wood and non-timber products removed from state lands. In other cases, state-owned forest land is simply left to others to exploit, without any official granting of rights. The government reserves the control rights, though it often does not exercise them.

Another blurring of government and community comes when the community is defined as everyone within a given geographic area. These geographic areas may correspond with official or political boundaries established by the government. In considering systems of management defined by such boundaries, many analyses have ignored the fact that the uses of communal property are often *governed* by bodies made up of a subset of members of the community within a broader geographical area. In India, Nepal, and other South Asian countries, for example, village or multi-village councils called *panchayats* often control various plots of land. Unfortunately, studies which

focused exclusively on geographically defined groups often led earlier assessments of communal property to assume that it would be used without control or discipline by community members.³

Risks Facing Private, State, and Community Forest Management

Risk of Others' Access

The risk of *unstable* user rights can arise because those with the control rights to determine access may: 1) re-assign direct user rights from the original user to other users; or 2) may neglect or lose their capacity to enforce exclusion, leaving the forest in an "open access" condition. The latter has occurred in Honduras, where farmers have extended their fences to include forestland that is legally part of the national forests (Jones, 1988: 156).

The possibility of re-assignment of user rights makes state control risky for people who are operating under leases or temporary privileges provided by the government. Especially when one government is replaced by another, the forest users face the risk that their arrangements with the state will fall apart. The traditional forest users also face this risk when newcomers succeed in getting government recognition of *their* user rights. For instance, governments frequently recognize the user rights of colonizers over the rights of long-standing residents. User rights are clearly most secure when the control rights are held by communities, for they have a strong incentive to keep outsiders from gaining access to the forest resource.

Risk of Stricter Regulation

The threat that profitability will be eaten away by stricter government regulation arises whenever the government has the discretion to tighten the rules of resource use on state land that is leased or allowed to be used by others, or to impose stricter regulations on non-government

land. Even if the private resource user is recognized as mindful of the long-term profitability of his or her resource use, government intervention may be prompted by the concern over spill-over effects or the simple desire to have more control. Without a community organization overseeing responsible uses, the government may well see a vacuum to fill.

Risk of Exclusion of Nongovernmental "Owners"

When the government leases state-controlled forests to particular users, or recognizes the rights of specific users on non-government land, these users often try to keep other users away from their resources, even if these other users have previously had direct user rights. Private logging companies often prefer to exclude everyone from their concessions, regardless of the resources that others may want to extract. At other times, especially when governments promise to provide greater financial resources to develop a forest, outsiders rush to establish property claims where no formal or clear property titles exist.

Risk of a Low Share of the Community's Forestry Earnings

Where forest use rights are held communally, there is a risk that a particular community member will receive an inadequate share of the income. While any type of community organization can fall prey to corruption and disputes over how to distribute the earnings, communities of identification and interest, as opposed to communities defined by geographical boundaries, are likely to do better in terms of this risk.

Second, a surprising risk of receiving an inadequate share arises when the government tries to "privatize" user rights in what had been a communal user rights arrangement by apportioning rights to individual members. Often the community has an obligation to assist

widows, orphans, the elderly, or those without children who can work on the farms and in the forests. If the government intervenes to grant formal property rights to individuals who are currently working the forests, it may well exclude community members who are not in a position to exploit the resources at that time.

Risk of Inadequate Credit

Credit is important both to finance forest resource development and to provide emergency income in the period before forest products can be harvested. Credit depends on: 1) the capacity of the borrower to earn enough income to pay the interest and repay the principal; 2) the willingness of the borrower to meet these obligations; and 3) the existence of valuable resources ("collateral") that the lender could successfully claim if the borrower fails to meet the obligations.

The credit issue arises when the government leases state-owned land for private or communal exploitation. If exploiters cannot claim ownership, the land (and the user rights) can hardly serve as collateral. They often have to depend on government credit, which has its own risks. For one thing, cheap credit is often distributed according to political considerations. Therefore, people with closer connections to the officials making the loans are more likely to get loans and other resources.

In the case of communal forest resources, the community's access to credit depends on its ability to make credible commitments and to be able to offer some of its assets as collateral. The risk is that the community may not possess the internal unity to agree to make binding commitments, or that its assets will not be acceptable as collateral.

One of the most frequently cited instances of the economic drawbacks of communal property is the Mexican *ejido*, the twentieth century version of a communal property arrangement dating from before the Spanish conquest. It was

originally instituted to protect land redistributed to communities from being lost by that community. Yet because the *ejidos* could not sell their land or put it up as collateral for loans, it was difficult to obtain outside financing for agricultural development. Furthermore, *ejido* communities have shown a general lack of enthusiasm to plant trees or to maintain forest resources. However, the *ejido* arrangement is not a pure case of common property because community members have not held all of the rights associated with full property ownership. In reaction to the low productivity of *ejido*, the Mexican government began various efforts in the early 1990s to privatize them. The new policy is to allow individual *ejido* members to sell their assigned land or put it up as collateral.

Private forest users with land ownership or user rights that can be legally transferred have a form of collateral, but low-income forest users may not have sufficiently great loan needs to attract lenders (who are generally much more interested in lending large sums than small) or sufficiently valuable land or user rights to warrant the loan. The risk of the small-scale, private forest user is in his or her isolation.

Risk of Cash Shortage

Forest users may have or anticipate cash or income needs in the period before the appropriate time to harvest their forest resources. In this case, the user has two relevant options: borrowing and selling. The same problems of credit arise for borrowing for emergency cash needs as arise for borrowing to finance forest development. In addition, selling forest assets before the forest products are harvestable faces the risks that the government may not permit such sales or that customers may not be available to buy forested property or future harvesting rights. To be able to sell the land, there must exist a market for land and forest resources.

Risk of Low Market Prices

The risk of declining prices of forest products can affect users of all types; the question is whether different arrangements of user rights can reduce the likelihood that government actions or other conditions will drag down prices. Three conditions frequently result in unusually low prices: world market declines for exported items; government actions; and low prices offered by middlemen.

When international wood prices decline, the government may prefer to help out state enterprises rather than private or communal exploiters, in order to protect the jobs of state workers. However, subsidized forest exploitation often lacks sufficient economic justification for the society as a whole. In contrast, communities holding the full set of forest user rights, including the rights to decide on the rate of resource exploitation, can decide how much to harvest in times of low prices. Large enough communities can often ride out the period of lower prices by pooling their resources to protect community members with the greatest needs for emergency cash.

When the government holds the rights to establish the sale prices, the most common problem is government-imposed ceilings on forest-product prices. The better organized the forest users, the more likely that they can pressure the government to eliminate price ceilings or at least avoid forest-product prices too low to permit the forest users from making reasonable profits.

The final price risk is that middlemen will buy cheaply from the forest users and reap the profits themselves. While the profiteering of middlemen is often exaggerated, when it does occur, the capacity of the forest exploiter to take on activities usually performed by middlemen (such as processing, transporting, and marketing wood products) becomes important.

Risk of Harmful Spill-Over Effects

Governments often retain control rights because they fear that forest users will harm the incomes or well-being of other people. Some steps can be taken to link up communities so that they take account of damage by one onto another. Yet even so, some effects will remain external. This is the one risk best addressed through governance by the geographically defined community, since all residents are affected. In order to reduce the likelihood that detrimental external effects will go unaddressed, the boundaries of the governing community should be roughly equivalent to the boundaries of the harmful effects. Lower levels of government, as long as they cover affected areas, are likely to be more responsive to environmental effects than are more distant, higher-level governments.

The authority of the government to regulate forest uses for the sake of environmental protection and the reduction of harmful externalities also carries responsibilities. Because these responsibilities are not always met, formal control rights do not eliminate the risk that the damage will occur. In the Mexican state of Quintana Roo, the state government granted concessions to the commercial logging company MIQRO (*Maderas Industrializados de Quintana Roo*). MIQRO and the small-scale contractors excluded local people from the forest and neglected reforestation, essentially ignoring the terms of its contract (Bray et al., 1993). The government was either unwilling or unable to enforce those terms, and the local community lost out as a result.

OVERCOMING ECONOMIC OBSTACLES IN FORESTRY

Community organization of forest activities is crucial for overcoming economic difficulties. Governments can help forest users to secure their forestry incomes through community action without price controls, subsidized credit, direct

control of forests, or other heavy-handed interventions.

Deciding on whether to invest in forest development requires:

- anticipating the income and the costs of forestry activities compared to available alternatives. Careful, sober economic evaluations of forestry profits must be made to determine whether they are worth the investment of time, effort, land, and money;
- weighing the value of income likely to come in earlier versus later years. Some people need income right away; this is often the case with very low-income people. Some people, even if they are not desperate for income at one point in time, may have emergency cash needs that require them to be able to liquidate their investments at any time in the future. *Low-income forest users typically have put great value on income that can be earned, or at least can be available if needed, in the early years;*
- deciding how much importance to give to avoiding risky investments. Poor people cannot afford to be big gamblers. Their willingness to sink resources into forest development, as well as to forego immediate opportunities to over-harvest forest resources that they did not develop, depends on bringing these uncertainties about the investment within reasonable limits.

Strategies for Reducing Risks, Uncertainty, and Time Horizons

Forest users face both physical and economic risks, as noted above. There are several possible strategies to reduce the severity of these problems. These strategies can be divided into the following categories: 1) reducing the

physical risks of specific forestry ventures; 2) reducing market risks; 3) reducing uncertainty; 4) developing earlier income opportunities; and 5) reducing the general economic insecurity of forest users. These general strategies and related tactics are discussed below.

Reducing the Physical Risks of Specific Forestry Ventures

The physical risks of specific forestry ventures include natural disasters; inappropriate or excessive exploitation by others; damage to the forest resource due to other activities; and exclusion by the government or others claiming ownership.

The impact of physical risks from natural disasters can be limited by physical separation and variety. Technology can also reduce physical risks, for example, through genetic engineering of pest- and disease-resistant trees and other plants. However, technologies impose their own costs: resources must be expended to identify appropriate technologies, to pay for them, and to train people in their use. Therefore, collective action, by pooling resources and shielding individuals from risk, can be important in adopting technology. Governments can play a complementary role by providing financing and technical assistance.

Physical risks involving encroachments by other forest exploiters must be addressed through strong community organizations. Group strength is needed to negotiate with others, and to stand up to them physically if necessary. Clear group and territorial boundaries from the outset obviously help. Yet since user groups have limited policing or legal powers regarding the actions of others, government has another potential role in upholding boundaries.

Reducing Market Risks

Forest users sometimes have to pay high fees regardless of their profits or losses, leaving the forest user to bear all of the risk if revenues are

disappointing. Because government officials have to observe rates established by laws and regulations, the charges for using state lands are often inflexible. For example, the pine resin tappers of Honduras have had to pay a nearly constant fee of US\$10 per quarter metric ton of resin to the state forestry corporation, local government, and their cooperatives, even though the market price for pine resin during the 1980s fell to US\$16 after reaching a high of over US\$40 (Stanley, 1991: 31). Similarly, in Brazil, the rubber tappers who work the trees controlled by large-scale "rubber barons" pay sizeable rents that along with the practical necessity of buying their supplies from the landlords often keep them in indefinite debt (Allegretti, 1990: 253).

More frequently, however, users are permitted to harvest resources without having to make significant payments for access, and their input costs (labor, tools, seeds, etc.) are stable and known. The major economic risk for all resources users, therefore, is in the output prices. Part of this risk is pure market risk, as prices are variable and often suffer declines over the long run. Forest users can try to reduce market risks by pressuring the government to remove price ceilings and to recognize their right to sell products at the market price. Users may also accommodate the risk of disappointing prices through risk-sharing and diversification.

Risk Sharing. Whoever provides money, labor, or natural resources to forestry ventures, and stands to lose it if the ventures are not successful, bears some of the risk. Therefore, every community forestry initiative is already a risk-sharing arrangement, in that the risk of any single venture can be spread among many forest users. The forest-user community may be able to reduce its risks further through:

- **Joint Ventures.** People or institutions outside of the community, such as government, state enterprises, non-governmental organizations, private companies, forest-product processors, etc., can contribute resources to the

community. For example, the social forestry programs in the Indian state of Gujarat offer joint ventures with the poorest villages which have only their labor to contribute. The government buys the seeds and pays for technical assistance for strip plantations, and the villages split the earnings with the Gujarat Forestry Department (Dalvi and Shukla, 1988: 44-45).

- **Merchant Middlemen.** In addition to getting the products to market and sometimes providing credit, middlemen absorb some of the risk of falling prices. In Honduras, for example, the resin-processing cartel provides a fixed price over the six-month tapping season, even if the refined resin price falls during that period (Stanley, 1991: 31).
- **Crop Insurance.** The insurance fund allows the costs of an insured disaster to be borne by other insured people who have contributed to the fund, or by other sources (such as the government) willing to subsidize the insurance fund. Yet crop insurance in general faces severe problems in both developed and developing countries. First, tree growers may have less incentive to care for their trees when the insurance is there to save them from risky actions or neglect. Second, crop insurance requires high administrative costs in order to prevent cheating. Third, disaster is likely to strike many farmers or tree-growers at a time, so the insurance fund may be quickly depleted. Fourth, the insurance fund often will end up insuring the less competent tree-growers, who naturally have the highest risk. Finally, if the insurance program is to be self-financing, the premiums have to be high to reflect true cost; this will effectively exclude those who are in greatest need of insurance—the poor.

On the other hand, some success with crop insurance has been found in community-managed mutual insurance funds, in which the members decide collectively who will belong. This reduces the danger that farmers with poor records will participate. Because the mutual fund members usually live close together and are often tied by family connections, there is effective mutual monitoring and hence less risk of cheating.

- **Government Marketing Boards.** Government marketing boards are entrusted with the task of stabilizing the prices obtained by primary producers to insulate these producers from the damage of low prices. Unfortunately, state marketing boards are very often managed by officials who want to increase the take of the board itself, or the boards are captured by government policymakers who want to increase the government's revenues (Bates, 1988). Furthermore, these government agencies often have the power to force producers to sell only to the marketing board and often impose prices that are lower than what the private market would provide.
- **Borrowing to Reduce Risk.** Borrowing can reduce risk, but only if default is permitted upon the failure of the venture. This applies whether credit is extended to individuals or to organizations. In alternative situations, borrowers may face perverse consequences from attempting to reduce their economic risks. In some lending arrangements, for instance, the borrower simply remains in a permanent state of indebtedness, with obligations to work for the lender, who is often also the large landowner. Many rubber tappers in the Brazilian Amazon are "captured" in this way (Allegretti, 1990: 255).

No-default arrangements are more common when individuals borrow from other individuals. There is much evidence that moneylenders are often able to reduce their risk of default to close to zero. For example, Kailas Sarap (1991) finds a very low rate of default on loans even to the poorest households in the Indian state of Orissa. This is due not only to the loan terms that require the borrower to work off the debt if it is not paid back on time, and to the borrower's recognition that defaulters have much more difficulty getting loans in the future, but also to the great social embarrassment of being in default.

In contrast, businesses, whether private or communal, can and do often go bankrupt. Thus the key for forest users is to borrow money through organizations that can take reasonable risks (as judged by themselves and by the lenders), but can default and dissolve if the ventures do not work out, or surrender the control over the forestry venture while shielding the individual households from both economic and social pressure.

Diversification. Broadening forestry development to cover a wider range of activities can reduce economic risk as well as produce earlier incomes. With diversified activities, single failures will not result in disaster. The most significant forms of forestry diversification are:

- **Primary Forest Product Diversification.** Developing and extracting a broader range of forest products, such as a wider variety of trees or gathering non-timber forest products. In the Brazilian Amazon, for example, the rubber tappers who are not beholden to large-scale landowners⁴ have been able to diversify their family production to include the gathering of Brazil nuts, palm hearts, fruits, and medicinal resins.
- **Downstream Diversification.** Involvement in more activities for a given forest product. Expansion into the processing and marketing of primary products such as timber, resins, nuts, etc. capture more of the profits that come from "adding value" to the raw resource. However, there is no guarantee that expanding the community's processing capacity makes economic sense.

Greater involvement of the original extractor in the marketing of the raw material or its processed products may be able to strengthen the bargaining power of the resource-extractor in setting the price to the next buyer of the resource. For example, in Honduras there were roughly 100 cooperatives (with a total of around 4,000 members) involved in pine resin extraction in the mid-1980s, but only two buyers in the whole country - a situation that gave the buyers so much bargaining power that the cooperatives' profits were very low (Abt Associates, 1990: 55). However, the apparently great mark-ups imposed by middlemen do not simply represent profit because the middlemen also face numerous risks. Diversification can also reduce risk by making the community less vulnerable to price downturns of its primary outputs.
- **Diversification Beyond Extracting Forest Products.** Combining forestry with activities that do not involve the extraction of forest products. Non-forest-extractive activities span a wide range, from developing nature-oriented tourism ("ecotourism") and game reserves to raising livestock. This form of diversification has an advantage over forest-product diversification and downstream diversification because the people involved are less exposed if the entire forestry sector suffers a major setback or forest-user rights are disrupted.

Reducing Uncertainty

The root of uncertainty is lack of information. Many forest users shrink from truly promising developments because lack of information increases the perceived level of risk. For instance, the practice of pine resin tapping in Honduras is a sustainable extractive activity because modern methods can keep a tree productive for up to forty years, yet it has been abandoned in certain areas because the tappers do not know whether the wide swings in prices will allow them to sell their resin profitably. Several cooperatives have begun to cut the abandoned trees for firewood (Stanley, 1991: 31).

By pooling their resources, community groups can make enormous progress in improving their information and technical expertise. The Kuna Indians of Panama, for example, have succeeded in establishing a forest park reserve that makes money from tourism, scientific research, and donations. To handle all the complexities of this enterprise, the Kuna pay for the advice of international advisors (Clay, 1988: 66-67). The government also has an important role to play in providing better information, since good information is a necessary condition for efficient markets.

Developing Earlier Income Opportunities

Forest users may be able to increase their opportunities to obtain income by planting faster-growing trees, harvesting other products, or developing other productive activities.

- **Faster-Growing Trees.** A seemingly straightforward way to bring forward the pay-off period of forest development is to rely on faster growing species. Yet there are important physical risks involved with introducing and relying on fast-growing species. The close plantings typical in plantations risk a high chance of infestation by pests that specialize in that tree species. Fast-growing species that

are not native to the area ("exotics") may face great risk of disease or poor growth. Exotic species may also have unanticipated impacts on the whole ecosystem.

- **Harvesting Wood before Maturity.** Other techniques for hastening the returns on timber itself include selective pruning of branches for firewood and harvesting for poles rather than for sawn timber. As sensible as these techniques may be if done with restraint, there is the danger that their availability will provoke their unrestrained use.
- **Extraction of Non-Timber Forest Products.** Forest products other than timber, such as fruits, resins, nuts, and flowers, are often immediately or soon available for harvesting. Even if non-timber extraction is not a big money-maker, it is an obvious source of income supplement while the forests exist, and has clear effects in winning over the extractors to the idea that they should conserve the forest.

Nevertheless, in pre-independence Kenya, the British colonial government frequently denied permits to local Kikuyu people living in the southern Mount Kenya region to gather medicinal plants, deadwood, and honey from the crown forests that had recently been their own communal land (Castro, 1988: 41). Many observers have remarked on the disinterest of governments to promote non-timber development and extraction in Mexico, India, Malaysia, and other countries.⁵

- **Drawing Earlier Income through Development Activities.** A well-organized forestry community can buffer the incomes of its most economically vulnerable members by assigning them the development tasks that command continuous payment. These include the

tasks of operating the nurseries, weeding, guarding, constructing and maintaining trails, etc.

Liquidating Forest Investment without Liquidating the Forest. If forest users anticipate that they *might* need income before forest resources reach maturity, it is important for them to have the *ongoing* choice of keeping their investments in long-term forestry development or cashing in on their investments earlier. This must be an ongoing option because the forest users do not know ahead of time whether they will need income earlier than the maturity of the project. The two major options are borrowing and selling.

Credit and Borrowing. Borrowing based on the future value of the forestry assets can be conducted within or outside of the community. Community organizations can establish emergency loan funds to help members during difficult periods and to provide small-scale financing for members' private economic ventures. Knowing that such funds will be available if a promising investment opportunity arises will make community members more content to keep their savings in forest development.

Kin and friends often feel pressures to lend to one another at very low interest rates, sometimes resulting in wasteful personal spending and unwise investments. Thus, one advantage of creating more formal loan funds within community organizations is that enterprising, savings-conscious members of the community can refer personal requests for loans to the community loan fund, where proper screening and reasonable interest rates can be applied. Nevertheless, community forestry operations are not often blessed with big treasuries, especially during the start-up period before their forest resources are yielding high revenues. The three options outside the community are typically the area's private moneylenders, the private banks, and the government.

- **Private Informal Credit:** Even where government and private-bank credit is available, many people prefer to borrow from informal, unregulated sources despite high interest rates. These sources can lend more quickly, make small loans, and allow more flexibility in the use of the borrowed money (Bolnick, 1992: 63). The key factor that seems to explain whether private credit sources charge reasonable or excessive interest rates is *competition*. Where borrowers have access to more than one lending source, the interest rates come to reflect actual costs and risks (Aleem, 1990; Iqbal, 1988). One careful assessment of lending throughout rural India found that the presence of a bank in the village significantly reduces the interest rates charged by moneylenders (Iqbal, 1988: 374).
- **Private Formal Credit:** Private banks can lend to both community forestry organizations and to households within the community. The well-known drawbacks of formal banks are their tendencies to make only big, long-term loans; to prefer borrowers with solid collateral; to take moderately long periods to decide on loans (as compared to informal moneylenders); and to lend within the bankers' social and political groups, which rarely include low-income forest-users. The clear lesson is that community organizations can generally qualify better for private bank loans than can individual members of the community.
- **Government Credit:** Government lending, if targeted to small-scale activities of lower-income people, can go where private lenders are not interested. However, governments often provide rural credit at below-market interest rates, which leads to an alarming number of problems.⁶ Low interest rates mean that the government cannot afford to provide

cheap credit for everyone; consequently, the loans end up being rationed, giving an advantage to people with the best connections to the officials responsible for lending. In addition, lending by government often carries the same pitfalls as lending by private formal entities, including the problems of collateral and of providing evidence of title to land. In countries where titles require demonstration that land has been "improved," such as Costa Rica, this has actually led to the destruction of natural forests in order to qualify for government loans! In addition, certain land uses, such as cattle ranching in Costa Rica, are often extended beyond their appropriate areas because cheap credit makes them profitable (Lutz and Daly, 1990: 13-16). Furthermore, the apparently lower interest rates of official credit from government agencies may actually mask the need of the borrower to provide bribes to the bank officials in order to qualify for the loans (Iqbal, 1988: 377; World Bank, 1990: Chapter 7). Cheap government credit may therefore even *raise* the interest rates for poor people. If the borrowers who do not qualify for government loans are the most economically vulnerable people, then the risk facing the moneylenders may actually go up, requiring higher interest rates to offset this risk (Iqbal, 1988: 371).

Early Sale. The most direct way for forest users to cash in on future earnings is to sell the land or user rights when the cash is needed. Alternatively, even if the forest user does not want to sell the user rights or land, he may wish to sell forest products before they are ready to be extracted. Similarly, the buyer may be content to have the product and not wish to pay for user rights beyond a particular sale. The peculiar risk associated with arrangements for sales of future shares or harvesting rights is that the value of the deal for the buyer depends on the assurance that the arrangement will be honored. Legal recognition of the right to sell

is important because remarkably long-term agreements can be made—which can thereby bring the benefits to the forest developers very close to the beginning of their efforts. In feudal Japan, for instance, there was sufficient recognition of contracts from 1600 to the mid-1800s to allow rural villages to enter into formal agreements on sharing of timber sales as much as fifty years into the future (McKean, 1993: 72).

Reducing the General Economic Insecurity of Forest Users

Beyond the risks of specific forestry ventures, it is often the overall insecurity of the forest user that drives the irresponsible exploitation of forests. Income security can be addressed by the principles of sharing within a community, as they establish the community's obligations to aid its members in greatest need. In addition, any community or government strategy that improves the incomes of the very poor, or simply smoothes out their income flows, can contribute to greater incentives to focus on long-term sustainability.

Policy Reforms: What Government Should (and Should Not) Do

Governments and government policies can be the source of the economic risks to sustainable small-scale forestry activities or can be part of the solution. In order to ensure that government policies *promote* sustainable solutions, the following are recommended:

Government should stay out of the businesses of:

- marketing forest products;
- rationing cheap credit.

Government should also avoid the heavy-handed regulations of:

- prohibiting middlemen and moneylenders;
- forcing downstream diversification by restricting markets;

- restricting rights to sell or use assets as collateral;
- prohibiting non-timber forest products extraction, even from state-controlled land;
- imposing policies that make certain land uses artificially attractive.

Government should be very wary about:

- leasing state-controlled land to commercial loggers who might exclude traditional users;
- excluding small-scale forest users from state-controlled land even for the sake of conservation.

However, there are many useful functions of government that do not require heavy intervention:

- upholding appropriate boundaries;
- enforcing rules against spill-over damage when the communities cannot resolve these conflicts;
- helping the development of private credit institutions;
- providing credit at market rates;
- supporting research and technological development;
- providing technical assistance and training;
- providing market information;
- aiding diversification by easing the bureaucratic obstacles to entering into new activities and markets;
- entering into joint ventures with communities lacking sufficient internal resources or capacity to borrow;
- undertaking general poverty alleviation programs.

Beyond specific functions, it is important for government to provide a rather stable environment with clear signals of its policy intentions. This is necessary to reduce "government risk:" the possibility that the government will change the conditions that affect profitability or long-term assurances of use.

APPROACHES TO COMMUNITY ORGANIZATION

Communities face five different community forestry challenges: 1) obtaining user rights for existing resource opportunities; 2) defending existing user rights and restrictions; 3) obtaining user rights for state-created resource opportunities; 4) expanding the resource base; and 5) expanding the processing capacity for existing resource uses. These problems and approaches to help to deal with them are outlined below.

Obtaining User Rights for Existing Resource Opportunities

Regardless of whether the state can make a credible claim as a competent forest manager, most governments have already laid claim to most or even all forest lands. Even when a community has had a long tradition of using the forest, community groups typically have to get the government to grant them user rights.

When community groups try to secure these rights, they often confront government agencies that prefer to grant logging concessions to large-scale commercial enterprises, usually from outside of the local community. Commercial loggers are usually prepared to pay large royalties to the government, while community forestry is often smaller scale and cannot produce the large surpluses that could be shared with the government. In addition, commercial logging companies are also often prepared to take on special "projects" that the government officials would find it difficult or embarrassing to do themselves.

Although governments often believe that the commercial logging companies are competent to exploit the trees efficiently, in fact their heavy equipment and hasty harvesting frequently ruin other trees for later harvesting. Thus, the latest trend in many countries is disappointment with private loggers. This trend obviously opens up opportunities for local community groups to

petition for forest-use rights. In Mexico, for example, the state of Oaxaca cancelled private loggers' concessions in 1981, leading to intense and sometimes successful efforts by community groups to gain user rights. In Honduras, the government is giving serious thought to "privatizing" all trees on private land, reversing the 1974 nationalization of trees.

Finding Allies

To obtain the resources to successfully gain rights to existing resources, community groups often must ally with other groups. Allies for community organizations include various agencies within the governments themselves, non-governmental organizations (NGOs), and international organizations and the donor agencies of industrial countries. In many instances, the agencies within the government that are responsible for assisting community groups are not very powerful; they may have been created simply to deflect criticism of the government. For example, the Brazilian government's Institute for the Defense of the Forest and the National Indian Foundation were given a very small fraction of the budget devoted to Amazonian "development."

However, when an international agency such as World Bank or the U.S. Agency for International Development (USAID) provides a grant or loan for forestry projects, the incentives for forestry agencies and other governmental units to embrace community forestry elements in these projects are often tremendous. When the Canadian International Development Agency (CIDA) provided more than US\$3 million of hard currency to the Honduran forestry corporation to preserve broadleaf forests, it became attractive for the government to introduce agroforestry farm systems and forest conservation that gave the community a significant role (Abt Associates, 1990: II-71). USAID's support for the Olancho Reserve Forest Development Project also induced Honduras' forestry agency to focus much more

on community forestry initiatives (Abt Associates, 1990: I-13).

Another important means for community organizations to avoid losing out to larger, more powerful groups is to affiliate with broader movements representing local organizations from several areas. This is well illustrated by the Brazilian National Rubber Tappers Council, which is composed of local rubber tappers' cooperatives; this organization succeeded in getting the federal government to establish the Extractive Reserves Program. In the extractive reserve areas local rubber tappers' cooperatives would be legally protected from attempts by others to cut rubber trees, to make counter-claims to the right to tap the trees, or to otherwise threaten the viability of the rubber-tapping activities.

Defending Existing User Rights and Restrictions

Threats to the community's *pre-existing* user rights come from all directions. A community may lose its sole right (or its right entirely) if the resource appears to be under-used. For example, the native Dayaks in Kalimantan (Indonesian Borneo) and the Amerindians in Brazil's Amazon have been exploiting their forests for thousands of years, but to the Indonesian and Brazilian governments these areas have often seemed to be "uninhabited" wildernesses. To prevent the loss of user rights or the loss of exclusive user rights, the community needs to legalize and publicize its forest activities. For example, the Awa-Coaiquer Indians of the Colombian-Ecuador border created an alliance of communities headed by an elected governing council. This council pushed for government recognition of the Awa-Coaiquer Reserve (MacDonald, 1986).

It is generally important for the community to *create higher and higher levels of organization with similar community groups from other areas*. One successful case in Honduras is the

Cooperativa Villa Santa-Los Trozos. With outside technical assistance and support from the national federation of resin-tappers, this *cooperativa* gained a concession from the government to use 22,000 hectares of national forest of highland pines in the mid-1970s, including the rights to harvest and sell the pine trees after their useful resin production years have passed.

A community group can also maintain its exclusive rights by choosing forest development or extraction sites that can be more easily policed by the community. The decline of Honduras's first resin-tappers cooperative, the Cooperativa San Juan, illustrates the vulnerabilities of community organizations when access is open to everyone in a geographical area. Fencing in the pine trees or creating other barriers to entry is not permitted by the formal owners of the land, the *municipio* of Ojojana in Honduras. Since the cooperative members do not live close to their assigned parcels, they cannot monitor the theft of resin, equipment, or trees by outsiders. Although the Cooperativa San Juan started out impressively in 1966 with an initial membership of sixty members and grew to over 300 in the late 1970s, its membership had fallen to less than thirty-five by 1991.

In addition, restraining people *within* the user community is also essential. In Azad Kashmir, a large-scale, government-financed reforestation program was seriously undermined when the families living around community land, which was eligible for trees planted at government expense, began to partition the land among themselves and treat it as if it were their own private property. The large landowners were successful in gaining practical (if not legally recognized) control over most of the partitioned land, while the rest of the community became less interested in cost-sharing because their own potential benefits declined.

A community group may even have to assign members to guard the resource. In Bolivia, for

example, Indians gained the rights to nearly two million acres of land which had initially been designated as a conservation reserve by the government. Under the original plan, the Indians would have been excluded from using the forest at all. Even after receiving formal recognition of their rights from the government, the Indian community enlisted members of their own group to serve as forest guards.

Lastly, a community forestry program must provide sufficient rewards to encourage participation. At the same time, it must limit the resources that any given participant can exploit and require participants to contribute to the common effort.

Matching Responsibilities with Rewards

Enthusiastic participation in communal forestry activities is not guaranteed. Harvesting resources without destroying the resource base requires planning and hard work. For example, when Guatemalans gather palm fronds (*xate*) in the Peten forests, the first impulse is to chop as much as possible in short time, in order to leave the forest and avoid malarial mosquitoes and poisonous snakes. To conserve the *xate*, however, requires a much more laborious effort of cutting only what is in condition to be exported (Dugelby, 1992).

Defending user rights and restrictions carries several responsibilities, including vigilance to guard the resource against encroachment by outsiders and over-use by community members, activism to stand up to the government or to other groups, and willingness to make short-term sacrifices to contribute some profits to the collective enterprise. The Honduran resin cooperative of Villa Santa-Los Trozos, for example, was successful in building up its financial and administrative capacity because its members were willing to be taxed for each barrel of resin they produced.

It is also essential for community insiders to have clear expectations about the benefits of

participating and for these expectations to be fulfilled consistently. The most devastating blow against the Honduran Cooperativa de San Juan came when its president stole the equivalent of US\$50,000 from its treasury. No matter how committed the members were initially to this cooperative, most drifted away from the communal effort because the members' hard work did not translate into expected benefits.

The scope of activities of the community organization can play a crucial role in linking responsibilities with rewards. Some activities are risky and costly, but do not have direct rewards. Therefore, immediate rewards for activists and other workers can be important in sustaining community interest.

An especially important asset of community groups is their ability to follow up efforts to obtain user rights with effective community management of the forest resources. To better accomplish this, *community organizations should try to engage in multiple activities*. Some of these activities can be social or educational rather than economic in nature; the point is to broaden the base of connections that community members have with the organization. For instance, the Indian grass-roots movement against commercial logging, the Chipko movement, established an educational mission in addition to gaining user rights of forest resources. Local people were taught better land use, nursery management, and reforestation methods. Similarly, the Dasholi Gram Swarajya Mandal, a local Indian cooperative, not only launched highly successful demonstrations that ended discriminatory government policies for the distribution of forest wood, but also established "ecodevelopment camps" in areas seriously affected by landslides and soil erosion in the Alakananda region.

Resolving Conflicts within the Community

A community that does not handle internal disputes in an impartial and consistent fashion becomes vulnerable in several ways. First, if

conflicts spill beyond the community, others, including the local area's leaders and the government, may use the conflicts to justify intervention and to monitor, restrict, or terminate the user group's rights to exploit resources. Second, unresolved conflicts, or conflicts that appear to be resolved in unfair ways, can destroy the often fragile trust required for community cooperation. Third, decisions that are not considered legitimate by all parties can undermine the validity of further rulings in the eyes of the losers. Fourth, if failures to follow rules or to meet responsibilities go unpunished, resource users may perceive that over-exploitation and free-riding are possible, and that it is foolish to abide by the rules while others break them. Finally, for penalties to be effective, they must reflect the seriousness of the violation. If penalties are trivial, they will simply have no force. If penalties are too harsh, then the community itself may not enforce them, or the violators may sever their relationship with the community organization.

Obtaining User Rights for State-Created Resource Opportunities

From time to time governments create new opportunities for resource use, often in exchange for political support. In such cases, governments may prefer to offer these privileges to as broad a segment of the area's population as possible or to wealthier groups whose gratitude may be viewed by the government as more politically valuable. Often the first task of the user group is to avoid domination of the new project by the local elites.

Original forest-users are typically better off if they can organize apart from the broader community, get legal recognition of their exclusive right to exploit the forest resources, and only then try to attract outside help. In this way, the original forest-users can gain recognition of their special user rights *before* other groups or individuals are aware of the potential to prosper from the forest resource.

The importance of this point is clearly demonstrated in comparing two community forestry initiatives in Nepal. The promise of government funds in Chaap Aal Danda forest touched off a scramble by the local residents to be included. The original forest users, who were socially and economically quite distant from the individuals who tended to dominate the district, were isolated from the meetings. With a large increase in the number of families entitled to exploit the resource, no one had an incentive to show restraint in removing firewood. In contrast, the community forestry project for Tukucha Panchayat involved a much smaller user group, and efforts were made to encourage forest management by the forest users themselves. Initially, the traditional forest users distrusted the government, but as time went on, more and more of the traditional users became involved in the program.

Expanding the Resource Base

Starting afresh has a few advantages. Rather than relying strictly on traditional roles, community leaders can try to ensure that all the essential roles are undertaken: planting, weeding, guarding, etc. The creation of new forests is also a particularly opportune moment to plan monitoring systems.

Nevertheless, expanding the resource base is in some ways a bigger challenge than maintaining an existing resource base in a sustainable way. Creating a new resource base generally requires big, immediate investments of money and labor, with the bulk of the benefits postponed for several years.

The problems of creating new resources are illustrated by the example of village woodlots. Village woodlots were once enthusiastically backed by local governments and international agencies with impressive funding and technical assistance. However, many village woodlots had minimal community participation.⁷ In many cases, the village provided an inadequate

amount of land for the woodlot to be efficient. Conflicts also arose over the ownership of the land and the distribution of wood and revenues produced. The obstacles that stand in the way of success of this and similar programs are discussed below.

Coping with Short Time Horizons of Potential Developers

The first challenge of forest-resource development is to generate the commitment and rewards to encourage people to participate in projects that have predominantly long-term benefits. The problem for the community is to provide funds during the period before the operation becomes self-financing. The community must then ensure that job opportunities are available to the poorer segments of the user community, who are more likely to encroach on the resources prematurely. Some degree of formal organization is necessary either to collect money from the general community membership in order to pay these wages, or to encourage voluntary labor.

The Risks of Government Involvement

There is no easy answer to whether it makes sense to enlist government and international support to launch an initiative. In certain situations the participation of the government or other outside institutions, with their capital and expertise, is vital. However, the traditional user group that has a claim to the land may find that its exclusive user rights become eroded by government attempts to include additional beneficiaries or that government management stifles community involvement. For example, in the Indian states of Gujarat and Uttar Pradesh, the World Bank funded more than 23,000 village woodlot initiatives by 1993. Yet many communities and villages have refused the financial resources and technical support. This is due in part to the fact that cooperative arrangements often require the profits be shared with the organization that provided financing (Dalvi and Shukla, 1988: 45).

Membership Boundaries

One problem faced by community organizations is the question of defining their membership. Where few traditional user groups exist or where few resource sites are available, this choice may be clear. On the other hand, there may be more possibilities for membership when alternative sites exist, when land can be purchased or leased by a wide variety of groups, or when several different user groups have customary rights to existing uses of the same land.

According to the logic of individual incentive and group unity, smaller-scale projects, with more limited memberships, have several advantages. In particular, smaller ventures generally provide greater assurance to members that they and their families will receive benefits. A World Bank assessment of community woodlots in India and Nepal found that one reason why some woodlot initiatives fail is that the eligible population is too large and diverse (Noronha and Spears, 1985: 248). The question, therefore, is whether cohesive entities can gain access to enough land to make the woodlot worthwhile in the eyes of the involved individuals.

Arranging the Distribution of Benefits

The start-up phase is often the best time to establish how benefits ought to be shared. The community is less likely to fight over whether current benefits should be redistributed if discussions are held before the community expands the resource base and begins to capture the benefits. In contrast, if the community has not yet agreed upon a distribution by the time the government, NGO, or international funder comes into the community, then the promise of funding can create a competition for resources and special treatment that could destroy the possibility of cooperation.

Additional Purposes of Community Cooperation in Resource Development

There are several other functions involved in resource development for which community cooperation can be very important:

- providing the inputs for tree-planting, even if the seedlings or saplings are destined for planting on private land.
- securing inexpensive inputs (such as planting materials) and technical assistance whether the planting occurs on communal or private land.
- mobilizing people in the effort to maintain the rights to plant and harvest in particular areas.
- communal tree-planting efforts.

Expanding the Processing Capacity for Existing Resource Uses

An essential obligation of the community organization is to undertake a realistic analysis of the costs and benefits of any downstream processing or marketing venture. A critical element of this analysis is the potential market for products *processed by the community members*. Demand is often very sensitive to the perceived quality of the product. Consequently, community-processed products may suffer because they are often not as polished, sophisticated, or well-packaged as similar products manufactured by larger-scale, often urban-based producers.

Occasionally, the cost-benefit analysis will reveal that a downstream processing venture would become profitable, but only after a significant period of losing money. If the eventual productivity is high enough to justify foregoing other, more immediately profitable activities, then it is legitimate to support the venture as an "infant industry."

When processing and marketing are an economic success, they create income flows from

complicated economic transactions. Then, the need for monitoring is even more important. Compare the situation of the Honduran resin-tappers before and after the cooperatives came into being. Before, tappers sold directly to the middlemen and therefore knew exactly what their gain was. Under the cooperative arrangement, the cooperative receives the resin from individual tappers and conducts the sale; only after the cooperative has sold the resin do the tappers find out what their net gain or loss is. Obviously, the opportunities for cheating are much greater, both on the part of individual tappers and on the part of the cooperative organization. To address these dangers, it is important for processing and marketing cooperatives to have a management council comprised of people who are or can be trained to understand the financial aspects, as well as the physical aspects, of the operation.

Non-governmental organizations (NGOs) can be helpful in providing the economic expertise to determine whether a processing venture is actually worthwhile or in providing financial training to community members. However, NGO activists may have their own agendas that do not coincide with those of the forest users. In addition, some NGOs have antagonistic relations with the government, which may harm the community-government relationship if the communities are seen as allying with the NGOs.

The final challenge for promising processing ventures is to preempt the possibility of conflicts. To address the issue of fair sharing, it is essential to have an agreement, before the money starts to come in, on the distribution of gains. It is also essential to have an agreement as to how to cover any losses.

GOVERNMENT SUPPORT FOR FORESTRY COMMUNITIES

The government is usually the ultimate arbitrator of user rights when they are contested beyond the boundaries of single user communities. In addition, the government is often the only institution strong enough to keep outsiders from encroaching on the rights of established forest-users. Though it is important that they try to resolve conflicts internally to whatever degree is possible, communities cannot always resolve all of their disputes without external assistance. Finally, in many cases the past neglect of forest resources means that investments are needed to restore the resource base; communities often do not possess the required resources to carry out these investments.

Therefore, although governments have become increasingly interested in (or resigned to) decentralizing their own authority over forests and relying on community management, they cannot simply withdraw completely. The basic lesson is that governments must steer between withdrawal and dominance. This poses several dilemmas for government efforts to deal with community forestry issues:

The Dilemma of Conservation versus Forest Exploitation

Whether the government prefers to focus on conservation or to permit forest exploitation, it must deal with two kinds of problems: sustainability and 'negative spill-over effects. Effective solutions to these problems require the ability to restrict and monitor resource use. Thus, solutions depend significantly on the distribution of user rights to resource users. Governments often play an important role in this area.

The most obvious way for the government to limit forest-use rights is to *assign* the user rights to traditional users. The government's decisions

on who deserves the rights may come through its reading of the historical record or by other more politically determined means. This approach holds serious hazards because it implies that the government has the legitimate authority to assign these rights. A further problem is that government assignment of user rights generally designates them as formal, legal and fixed property rights. Therefore, such assignment often lacks the flexibility that communities need to regulate the rate and methods of forest exploitation in response to changing conditions. Finally, when governments assign user rights directly, they typically operate at the individual or family level, bypassing any community organization. The alternative is clear: *Rather than assigning user rights directly to individuals, the government should recognize the authority of appropriate forest-user organizations to assign and adjust user rights.*

Another important but subtle way that the government can uphold existing user rights is to make clear its intention *not* to grant benefits of government forestry projects to large landowners or other powerful local people who present shaky claims to land or forest user rights. For example, in Azad Kashmir, the Pakistani government established the Hill Farming Technical Development Project. The project included a total area of over 800,000 hectares, with fuelwood planting on 7,500 hectares of "community-owned land" (*shalimat* land). Although small farmers were intended to be the main beneficiaries of the project, the government failed to enforce the community property status of the land. Instead, large farmers informally asserted their control over parts of the land in order to qualify for trees planted at government expense. Had the government made it clear at the outset that it would carefully monitor community land to ensure that it was being used by the community rather than by private individuals, such violations would have been less likely. Obviously, for such a statement to be credible, the government would also have to make a realistic commitment to such a stance.

In some circumstances, user rights and property rights may be confused or indefinite. In these cases, the government faces the difficult choice between encouraging the immediate creation of a community organization, or of instituting a government-run titling program. If the government takes on the titling task, it should undertake a rapid but careful processing of user-rights claims.

In other cases, the government also has the option of *leasing* state-controlled forest land to community groups for specific uses. The challenge is to design lease conditions that are regarded by community members as being close to indefinite user rights. For instance, in the Philippines, resource users can obtain ninety-nine year leases. When they have such assurances, the forest users will care deeply about the long-term survival of their area of the forest system. At the same time, since lands remain under government monitoring, users will still perceive a risk to their rights if they cause damage to other areas or to other communities of users.

Alternatively, on state-controlled land, governments may be able to merge government forestry efforts with community efforts. For example, since 1980, strip plantations on state-owned land in the Indian state of Gujarat (along highways, canals, railroad tracks, etc.) have been planted by the state forestry department but protected by nearby villagers. The harvest revenues are split between the village panchayats and the Government of Gujarat. Non-timber resources can be removed by anyone (Dalvi and Shukla, 1988: 44-5; 68).

Though it is necessary to limit resource use in order to promote sustainable use, it is generally a mistake for governments to go one step further and prohibit forest uses by anyone. In Liberia, for example, the Forestry Development Administration was required to enforce a law in the 1980s imposing a total ban on hunting in Liberian forests, despite the fact that game provides an indispensable 80 percent of the rural

population's animal protein (ITTO, 1988:48). With the exception of small areas of particularly important or delicate eco-systems, prohibiting forest uses simply does not work. If outsiders perceive that the government does not have the resources to prevent, monitor, or punish violations (as is often the case), then they will encroach on the resources. The Pakistani authorities, for instance, had to contend with 50,000 cited violations within the Azad Kashmir forest area at one time in the late 1970s.

Beyond the question of the distribution of user rights, the government must also contend with the possibility of negative external effects of resource users. *The need to address spillover effects⁴, if they are serious enough, justifies government action on behalf of the wider society.* However, environmental damage that directly affects the interests of the forest users should be addressed by the users' community. The least costly way for the government to deal with negative externalities is to make the damage-causing community aware of the damage, and, if the damage continues, to tax the damage-causing community. However, it is often difficult to calculate a value for the damage. Communities may also be tempted to continue damaging activities secretly. Thus, a more effective, if more expensive, approach for the government may be to provide subsidies to encourage practices that reduce pollution and degradation. Governments may also be able to control negative spillover effects by employing leasing arrangements for forest lands; as noted above, such arrangements provide an incentive for users to avoid damaging activities which might imperil their own user rights.

The Dilemma of Small-Scale Exploitation versus Development

Many governments have traditionally viewed standing forests as obstacles to development. In Costa Rica, for example, forests are sometimes referred to as *tierra sucia*—"dirty land." This mentality poses three dangers for community

forestry. First, it implies that traditional forest uses as practiced by local forest users have insufficient yields. Second, it means that state control over forest resources, already justified in the minds of some government officials as a means of *conserving* natural forests, is favored by other officials as a means of *converting* natural forests into activities viewed as more conducive to development, such as farms, pastures and plantations. Third, it implies that community *organization* is a further obstacle to progress, because organized communities can fend off government development initiatives more effectively than can individuals acting alone.

Several examples illustrate the problems that arise when governments view forests as arenas for development. One of these is the tendency for governments to invest in development projects even when they make little economic sense. For instance, many governments persist in thinking that large-scale forest-products industry is a good idea despite many flaws in the strategy. In many cases, larger profits could be earned by exporting the raw materials and using the export earnings, along with available labor, to pursue more productive economic ventures. In other cases, forest industries face stiff competition from a few leading producer countries which produce finished goods very efficiently (Vincent and Binkley, 1992). This was the case in Honduras, whose state forest-products industry collapsed because other countries had more efficient sawmills (Miranda et al., 1992).

Emphasis on commercial logging and promoting domestic forest-products industry has three negative effects on small-scale forest users. First, logging rights are often given to commercial companies even if the community had prior user rights. Second, in order to force loggers to offer timber for domestic production, many governments have banned the export of raw logs. Since this generally results in lower prices for timber, this hurts small-scale loggers, even if they were not cutting trees for export.

For instance, when the Indonesian government banned the export of whole logs and effectively eliminated the foreign market, domestic sawmills were able to buy the logs much more cheaply (Gillis, 1988a:71). The loggers lost out because of the rapid drop in log prices. Third, communities that organize to fight for their user rights end up locked in confrontation not only with the companies but also with the government. Government officials should *not* assume, without adequate consideration of the economic and social implications, that forest-products industries and commercial logging are necessarily good for the country.

Even when the government recognizes community forest-users as an important part of the forestry effort, there are often differences in interests that cause conflict. For example, forestry officials typically want to maximize timber production, while communities want time to tend to their other income opportunities as well. In order to mitigate these differences, the government must address the concerns of communities, particularly with respect to income generation. For the government to kindle the enthusiasm of local communities, therefore, *it should support multi-purpose rural development programs*. Such an approach is more effective than trying to impose a straight plantation plan onto people who want and need more diverse activities.

Some of the most successful government efforts to assist in community forestry are therefore those that address the concerns of communities. More modest programs may be less likely to raise the fear that the government is using its programs to take over control. The government of Haiti, for instance, launched its Agroforestry Outreach Program in the early 1980s. The initiative established seedling nurseries and trained agroforestry extension agents to work with various groups to stimulate interest in tree-planting on private farmland. As a result, more than 50 million trees were delivered to more than 200,000 farmers (Rhodes, 1990; Murray, 1984).

The Dilemma of the Degree of Government Control

Government officials who wish to promote new activities involving low-income people often view themselves as the agents of change and the people as resistant to development. Government officials frequently conclude that it is necessary for the government to impose community forestry onto the people. However, when such programs are not to the liking of the local people, the government is likely to be blamed for the failure of the programs. Users may in fact resist such programs from the start.

When forest-users resist government-promoted change, the reason is likely to be suspicion of government actions. This suspicion arises from the common experience of having governments take over user rights and then blame local people for the over-exploitation that results from the government's inability to enforce restrictions on forest use. For example, the Ifuago people in the Philippines perceive that forestry laws are poorly implemented. This, coupled with the people's need for forest products, has produced a tendency to use the forest unsustainably (Diaz, 1982: 117). A similar pattern is seen in parts of India. The Indian government's action of placing trees off-limits to people who had customary rights and the government's ineffectiveness in upholding the restrictions were responsible at least in part for the deforestation both by people who previously had customary rights and by those who did not.

To address such weaknesses, the government may be tempted to create institutions for participation. However, this often results in artificial, government-controlled activities. Such organizations do not usually capture the loyalty of the community. In other cases, movements that eventually try to assert their independence are spurned by the government.

A good example of the ineffectiveness of government-controlled "community"

organizations is found in the Mexican state of Oaxaca. The state government has the authority to deny the legal registry of cooperatives. In promoting its own statewide umbrella organization, ARIC-Forestal⁹, in the 1980s, the government blocked independent initiatives. The "official" cooperatives have encountered serious problems. The distribution of profits is decided by state officials. As a result, cooperation by community members declined, community participation in joint efforts such as reforestation was weak, and deforestation remained a problem. When ARIC-Forestal was disbanded in 1992, an independent grouping of communities, the Unión Zapoteca Chinanteca de la Sierra Juarez (UZACHI), received official recognition. From the beginning, UZACHI has implemented plans to stem the deterioration of forests and to improve the communities' standard of living (Bray, 1991).

Government efforts to promote community forestry therefore require self-restraint by government officials. In many countries, independent organization still requires government recognition, because groups must have legal standing in order to own property, apply for loans, hire employees or run an office. Yet official recognition is very different from governmental control. In Honduras, for example, the establishment of Integrated Management Areas (AMIs) was conceived as a way to involve communities in forestry management. However, since the AMIs are designated to cover specific geographical areas and are responsible for representing the interests of all within that area, they do a poor job of representing the possibly distinct interests of various types of forest users. In addition, AMIs have been delegated government functions, such as forest use regulation. That is, rather than recognizing the right of forest users to organize, the Honduran government simply involved them in new state institutions. Community groups cannot function well as creatures of the government—it follows that *community groups must be allowed to organize independently*.

Another way the government can exercise self-restraint is simply to offer inputs, such as tools for tree planting, to communities or individual households without any further obligations on those who receive the inputs. At times, it may be convenient to supply these inputs indirectly through NGOs in the area.

Government can also help by providing technical assistance to steer the community through unfamiliar aspects of marketing, processing and finance, to keep community leaders honest in their handling of community finances, and to introduce new technologies. The most dramatic need for technical assistance arises when recent migrants begin to exploit the forest, for they usually have the greatest deficits in understanding forest harvesting techniques and agricultural practices appropriate for local conditions. In resettlement schemes ranging from India to Indonesia to Brazil, governments failed to perform adequate studies of soils, pests, weather patterns, water problems, etc. Settlers were typically brought in with inadequate preparation for the local conditions (Ascher and Healy, 1990: Chapter 4).

Unfortunately, some government officials providing technical assistance believe that they have the answers and that the local people are ignorant. However, successful resource exploitation requires a *balance* of local knowledge, modern science, and economics. In the Indian state of Gujarat, for example, the government's afforestation program lacked enthusiastic support despite the fact that the government offered planting materials and a monthly cash payment lasting for 15 years. The local people were reluctant to participate because they recognized that a single-species forest, unlike the mixed forests they had developed themselves, could not provide the diversified income possibilities that they required.

Even when governments possess good information, they must pay close attention to how this information is disseminated to communities. Extension services, the means by

which most governmental technical assistance is provided, often have serious problems. Underpaid extension agents sometimes operate another business, for instance in selling products, that may create a conflict of interest in the advice they give to the people. Tensions within the government may also show up in services that are offered to communities. For instance, extension agents in agriculture are sometimes hostile toward forestry, either because they view the expansion of agriculture as their mission, or because they see better possibilities for their own advancement as agriculture spreads into forest lands.

Non-governmental organizations can be useful in bridging gaps between government and communities. NGOs can convey information to communities or provide technical training and assistance. They can provide feedback to the government on how to improve public programs as well. However, governments should not assume that NGO involvement automatically leads to local participation. For example, the Costa Rican environmental group ANAI, Asociación de los Nuevos Alquimistas, has focused on establishing clear land tenure for small-scale farmers, sound ecological practices, and market diversity. ANAI rates its own efforts as successful (McClarney, 1989: 42). Yet ANAI's projects have been criticized by outside consultants: Except for the marketing group, local organization has been insignificant, and formal local involvement in decision-making has been lacking.

The Dilemma of Equity

Recently, many efforts have been launched to give more power to "local authorities." However, low-income forest users are not necessarily well represented or well-served by all local leaders. For instance, when authority is put into the hands of the area's leaders, because of their prestige and political-economic power, low-income members may lose their voice; this may occur whether leaders are formal leaders (for example, mayors or village council

heads) or informal leaders (for instance, prominent local businessmen).

This difficulty is illustrated by the Chaap Aal Danda initiative in Nepal. Project officials convened a few, area-wide meetings which were dominated by the district's most powerful individuals. The project staff mistakenly assumed that the district was comprised of one cohesive "local community" and that the local community and the local forest users were one and the same. As a result, the traditional forest users were marginalized from the decision process and from the project itself.

The Dilemma of Agency Autonomy and Avoiding Fragmentation

Those who favor community forestry and conservation speak of the need for a strong forestry agency that can assert the importance of its mission versus the priorities of other government agencies. The dilemma is that a forestry agency that charts a strong, independent course may neglect the crucial need to coordinate with other government agencies that also affect community forestry. Well-intentioned forestry programs and projects are often undermined by other policies that were developed without these forestry programs and projects in mind. Population settlement programs, for instance, can do enormous damage to community forestry because the combination of greater population pressure and government grants of land-use rights to the new settlers undermines existing user rights.

The recommendations noted above point to the need for strong coordination among numerous government agencies. For example, multi-purpose rural development programs in forestry communities will require cooperation among the different agencies of government that address poverty alleviation, credit extension, and forestry. Such coordination efforts can be aided by the support from the highest levels of government.

FORESTRY TRENDS IN DEVELOPING COUNTRIES

AFRICA

COUNTRY	NATURAL FOREST (1000 HECTARES) IN 1990	PERCENTAGE CHANGE FROM 1980 TO 1990	% CHANGE IN SAWNWOOD PRODUCTION 1977-79 TO 1987-89	% CHANGE IN PANEL PRODUCTION 1977-79 TO 1987-89
Angola	23,074	- 7.2	- 88	- 75
Botswana	14,261	- 5.1	na	na
Cameroon	20,350	- 6.1	+ 58	+ 10
Central African Republic	30,562	- 4.1	- 40	- 20
Congo	19,865	- 2.0	+ 12	- 26
Ethiopia	14,165	- 3.0	- 46	+ 10
Gabon	18,235	- 6.1	+ 17	+ 75
Ghana	9,555	-13.8	+ 10	- 11
Guinea	6,692	-12.7	0	-100
Ivory Coast	10,904	-10.5	+ 15	+133
Kenya	1,187	- 6.2	+ 25	+172
Liberia	4,633	- 5.1	+129	- 44
Madagascar	15,782	- 8.3	0	+467
Malawai	3,486	-14.9	- 27	+ 13
Mozambique	17,329	- 7.2	- 59	+113
Namibia	12,569	- 3.0	na	na
Nigeria	15,634	- 7.2	+ 70	+102
Senegal	7,544	- 7.2	+ 32	na
Somalia	754	- 4.1	0	- 33
Sudan	42,976	-11.6	- 7	- 40
Tanzania	33,555	-12.7	+ 78	+ 39
Uganda	6,346	-10.5	+ 10	+233
Zaire	113,275	- 6.2	+ 4	+109
Zambia	32,301	-11.6	+ 61	+ 92
Zimbabwe	8,897	- 7.2	+ 22	- 11

LATIN AMERICA

COUNTRY	NATURAL FOREST (1000 HECTARES) IN 1990	PERCENTAGE CHANGE FROM 1980 TO 1990	% CHANGE IN SAWNWOOD PRODUCTION 1977-79 TO 1987-89	% CHANGE IN PANEL PRODUCTION 1977-79 TO 1987-89
Bolivia	49,317	-12.7	- 44	- 76
Brazil	561,107	- 6.2	+ 36	+ 29
Colombia	54,064	- 7.2	- 24	+ 3
Costa Rica	1,428	-33.1	- 12	- 18
Ecuador	11,962	-19.5	+ 65	+114
Guatemala	4,225	-18.4	- 70	- 42
Guyana	18,416	- 1.0	- 9	na
Haiti	23	-59.8	0	na
Honduras	4,605	-23.1	- 27	- 32
Mexico	48,586	-13.8	+ 8	+ 79
Nicaragua	6,013	-20.7	- 45	- 64
Panama	3,117	-20.7	+ 7	- 18
Paraguay	12,859	-30.5	+120	+253
Peru	67,906	- 4.1	+ 14	- 27
Suriname	14,768	- 1.0	- 15	- 61
Venezuela	45,690	-12.7	- 6	+ 89

ASIA

COUNTRY	NATURAL FOREST (1000 HECTARES) IN 1990	PERCENTAGE CHANGE FROM 1980 TO 1990	% CHANGE IN SAWNWOOD PRODUCTION 1977-79 TO 1987-89	% CHANGE IN PANEL PRODUCTION 1977-79 TO 1987-89
Bangladesh	769	-46.6	- 54	- 75
India	51,729	- 6.2	+ 93	+ 98
Indonesia	109,549	-10.5	+191	+1,635
Laos	13,173	- 9.4	- 66	+800
Malaysia	17,583	-21.9	+ 20	+ 66
Myanmar	28,856	-13.8	- 20	+ 25
Nepal	5,023	-10.5	0	na
Pakistan	1,855	-39.7	+1,185	+113
Philippines	7,831	-38.4	- 35	- 21
Thailand	12,735	-38.4	- 30	+ 82
Viet Nam	8,312	-16.1	- 40	+ 58

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1. Specifically, the weighted average of the reduction in forest and woodland from 1977-79 to 1987-89, according to World Resources Institute 1992. The tables found at the back of this report summarize forestry trends in developing countries. The figures for the area and the change in the area of natural forests were taken from FAO 1994. The figures for the sawnwood and panel production were taken from World Resources Institute 1992.
2. There are some exceptions. In most countries, the minerals under the soil are considered the property of the state, regardless of the ownership status of the land. In some countries, the government has claimed ownership of trees, regardless of the land ownership.
3. Garrett Hardin (1968) condemned communal property in a very influential essay that implied that communally-held land would be over-exploited because access was open to the community or even beyond the community of traditional users. In calling this "the tragedy of the commons", he created a stigma against communal property and a tilt in favor of private and state property that is still a serious bias in many places. The "tragedy of the commons" is really a critique of open access resources rather than communally-held and *communally-controlled* resources.
4. These are called "autonomous" rubber tappers as distinct from the "captive" tappers who pay rent to "patrons" and are often permanently indebted to the patrons as their source of credit for market goods. Fortunately, the autonomous arrangement is becoming more common while the captive arrangement is declining (Allegretti, 1990: 255-56).
5. For Mexico, see Gomez-Pompa, 1987; for India, see Shah, 1988; for Malaysia, see Gillis, 1988b: 135.
6. Many of these problems are summarized in Adams, Graham and Von Pischke, 1984.
7. Surveys of the record and problems of community woodlots can be found in Cernea, 1985; Shah, 1988; Noronha and Spears, 1985; and Rao, 1984.
8. In the economics literature, these are labeled "negative externalities". See Pearce and Turner, 1990.
9. *Asociacion Rural de Interes Colectivo de Comunidades Forestales de Oaxaca* (the Oaxaca Rural Collective Association of Forestry Communities).