

# Borrowed from the Future

*Challenges and Guidelines  
for Community-Based Natural  
Resource Management*



FORD FOUNDATION

By Jason Clay

## FORD FOUNDATION

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Reduce poverty and injustice,  
Promote international cooperation, and  
Advance human achievement.

This has been our purpose for more than half a century.

A fundamental challenge facing every society is to create political, economic, and social systems that promote peace, human welfare, and the sustainability of the environment on which life depends. We believe that the best way to meet this challenge is to encourage initiatives by those living and working closest to where problems are located; to promote collaboration among the nonprofit, government, and business sectors; and to ensure participation by men and women from diverse communities and at all levels of society. In our experience, such activities help build common understanding, enhance excellence, enable people to improve their lives, and reinforce their commitment to society.

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**Using natural resources has impacts. Our goal must be to identify which impacts are acceptable.**

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# Foreword

## By Michael Conroy

Does community-based natural resource management provide a feasible solution for the combined problems of environmental degradation and increasing human poverty and inequality? Does the emergence of Internet-based communications, “green markets,” and the recognition of the vast array of environmental services provided by nature – but seldom valued in the market prices of products – make obsolete the whole notion of grassroots development? Or do the principal characteristics of contemporary economic globalization make obsolete the very hope for locally based, environmentally sensitive small-scale enterprises in a world of global “branding,” distributed global production, and increasing concentration in so many industries?

These are some of the critical issues addressed by Jason Clay in this provocative paper. Drawing on nearly 30 years of experience in attempting to design and develop mechanisms for community-based enterprises, Dr. Clay identifies some of the many obstacles that thwart their success; and he provides a set of ten guidelines for shaping community-based natural resource management in the future.

Why is this work of special importance to the Ford Foundation? Why undertake this analysis at this point? What importance could it have for other funders and development organizations? Those questions provide the focus for this brief foreword.

For the past five years, much of the work of the Ford Foundation linked to the alleviation of poverty and injustice has been organized conceptually under an asset-building approach in which work at the level of local communities is an important facet. The asset-building approach to poverty alleviation provides a significant departure from other paradigms that focused too often primarily upon subsidy and transfer programs that temporarily raise the incomes, or the consumption levels, of persons deemed to be poor, without affecting significantly the determinants of that poverty (cf. Sherraden 1991; Oliver and Shapiro 1995; and Ford Foundation 2002). The asset-building approach builds the enduring resources – indeed, the assets – that individuals, organizations,

or communities can acquire, develop, improve, and transfer across generations. These assets include (2002, pp. 2-3):

- Human assets such as the education and other marketable skills that allow low-income people to obtain and retain employment that pays a living wage, as well as comprehensive reproductive health which affects the capacity of people to work, overcome poverty, and lead satisfying lives;
- Financial holdings of low-income people, such as savings, homeownership, and equity in a business;
- Social bonds and community relations that constitute the social capital and civic culture of a place and that can break down the isolation of the poor, as well as the webs of interpersonal and intergenerational relationships that individuals need as a base of security and support; and
- Natural resources, such as forests, wildlife, land, and livestock that can underpin communities and provide sustainable livelihoods, as well as environmental services such as a forest’s role in the cleansing, recycling, and renewal of the air and water that sustain human life.

When this approach is applied to communities that are dependent upon converting natural resources into sustainable livelihoods, it becomes a strategy for building the natural assets of these communities. The theoretical bases for building natural assets have been explored by Boyce (2001), Boyce and Pastor (2001), and Boyce and Shelley (2003). Boyce and his co-authors note that the application of asset-building strategies to natural assets is compelling because “strategies for building natural assets in the hands of low-income individuals and communities can simultaneously advance the goals of poverty reduction, environmental protection and environmental justice” (2001, p. 268). It countermands the conventional wisdom that the poor face an inescapable tradeoff between higher incomes and a better environment. And building natural assets can contribute not only increased income but also nonincome benefits such as health and environmental quality.

For more than 20 years Ford Foundation programs around the world have

sought to develop mechanisms under which poor local communities can take their futures into their own hands, rather than wait for solutions that might be imposed from outside. As Clay notes in this paper, these approaches must work, for isolated communities around the world cannot continue to be denied the options that others take for granted. But, he argues, they have not lived up to many expectations. In his analysis, he offers first a critique of community-based approaches and an analysis of the ways in which rapid economic globalization has undercut many such efforts. He then offers specific suggestions about the ways in which the new forces of economic globalization can be tapped to benefit well-organized communities and their enterprises.

His solutions, both current and inspiring, range from proposals for embracing organic agriculture and other forms of agro-ecology for which small-scale, labor-intensive operations may have a global comparative advantage, to exploring the potential benefits of new systems of payments for environmental services, global programs for certifying sustainable management practices, and the development of value-added production around the gathering and processing of nontimber forest products.

His advice, to community organizers as well as to international development organizations and foundation funders, takes the form of “generic lessons.” He calls for new forms of effective partnerships, breaching the boundaries of traditional philanthropy to encompass new forms of community-based businesses. He advises funders that more money is rarely the needed solution: “In fact,” he argues, “less money – spent more intelligently, with longer time horizons, and with more technical assistance by more qualified staff – would be more effective.” These and other recommendations provide intriguing, insightful, and ultimately optimistic bases for rethinking and restructuring our most basic concepts about community-based building of natural assets in the face of contemporary global challenges.

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# Borrowed from the Future

By Jason Clay

**Ten years after the Earth Summit in Rio**, we have been unable to address two fundamental problems—degradation of Earth’s natural resource base and increasing human poverty and inequality. Using natural resources has impacts. Our goal must be to identify which impacts are acceptable. Similarly, rural poverty results from both low levels of productivity and inequality. Our goal must be to help the rural poor increase their productivity as well as their access to markets so that they have more and better options.

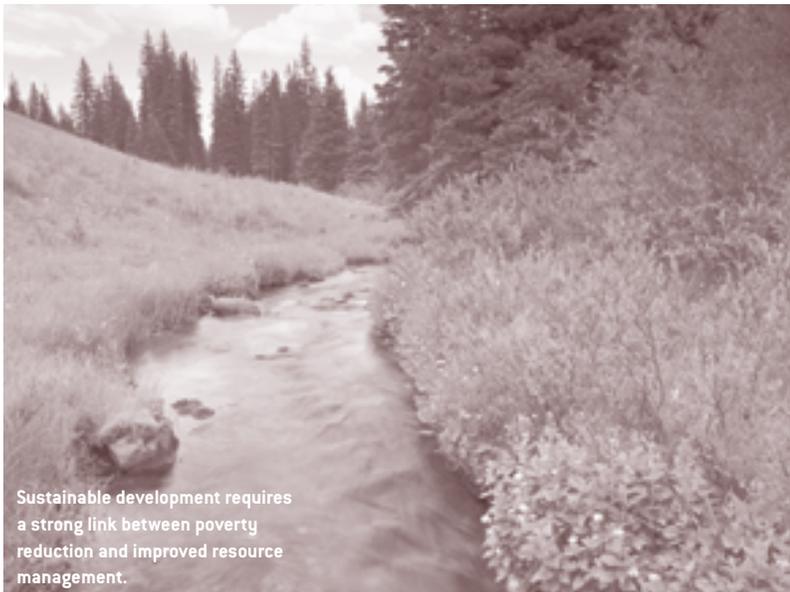
Well-managed natural resources do not always, or even often, result in poverty reduction, and increased income at the local level does not always, or even often, result in wise resource management. Sustainable

development, however, requires that the link between poverty reduction and improved resource management be strengthened. Five principles for addressing environmental degradation and rural poverty need to be given priority in future work if we are to be successful in linking improved resource management with reduced poverty. They are:

- Strengthening the rural poor’s access to natural resources;
- Increasing human capacity through education, health care, and nutrition, not only for effective resource management but also for reducing rural poverty;
- Compensating the rural poor for their role as stewards of environmental services;
- Ensuring that business strategies and ventures are financially viable; and
- Developing or taking advantage of creative new solutions and new partners.

Life on Earth cannot continue as we know it if we accept current levels of environmental degradation, poverty, and inequality. In fact, there is considerable evidence that environmental degradation and inequality are increasing. Clearly, what we have been doing isn’t working, but our methods are at fault more than our goals. We need new skills, new partners, and new strategies that anticipate and prevent major problems, rather than react to them as they unfold. We also need to monitor, adjust and learn from our efforts more effectively. The goal is to think differently about the issues on which we work and about the way we address them.

For the past 15 years, nongovernmental organizations (NGOs), churches, foundations, and governments have spent billions of dollars to reduce poverty and improve natural resource management. The



performance of such projects has been less than expected: the use of natural resources in such projects is often not sustainable, and the approach has failed to improve the well-being of local communities. This report explores the potential and the limitations of community-based natural resource management in addressing the root causes of poverty and offers lessons learned regarding how the link between the two can be strengthened.

### The Global Context

The evaluation of progress toward the goals of reducing poverty and environmental degradation should focus on whether the programs yield measurable positive results—first, in local communities and surrounding regions, and second, at a national or global scale. Is absolute poverty or environmental degradation (or are both) being reduced? Does community-based natural resource management (CBNRM) work address the root causes of poverty and environmental degradation? What is the global context (including markets) in which CBNRM work is being undertaken? Finally, is CBNRM the best tool for the task, and is it replicable?

It is appropriate to question how much impact one program can realistically have on global trends. These projects are not intended to be one-time experiments; they must be replicated to increase their effect. Given changing global and local conditions, it is worth considering with an open mind whether current responses are still appropriate.

### EQUITY AND GLOBALIZATION

Globalization means many things to many people, from increased integration of economies to the expansion of exports by only a few dominant producers. As a consequence of one's definition, perceived

risks can also vary tremendously: from being exploited and impoverished, to not being competitive, to being excluded altogether. One of the underlying questions about globalization is what its impact will be on the distribution of income globally. If no progress is made against hunger by the year 2050, half the world's population of some 9 billion could be living in poverty and suffering from malnutrition (IIASA).

The world today includes some 7 million millionaires and more than 400 billionaires—an indicator of enormous concentration of wealth. More important, the gap between the rich and the poor is increasing, even in industrialized countries. In the US, between 1979 and 1997 the average income of the richest fifth of the population jumped from 9 times to about 15 times larger than the income of the poorest fifth, and the average income of the poorest fifth fell by 3%. Around the world, the number of people living in poverty is also increasing. Because the poor are largely powerless, states have little interest in helping them and tend to focus instead on the inequality and struggles between the “haves” and the “have lesses.” The “have nots” are ignored (*The Economist*, 28 April 2001:73).

People who grow up in extreme poverty tend not to believe in equality of opportunity. Those who perceive that they have nothing to gain from an existing system have nothing to lose by trying to change it by whatever means necessary, including violence. In general, those countries with high levels of income constitute zones of peace, while those with low incomes tend to be zones of turmoil and war. In the latter, people have little access to basic necessities while they observe in popular media other people driving luxury vehicles, living in splendid houses, and using personal computers.

### BUSINESS AND BIODIVERSITY

A contradiction of our time is that we know more about conserving

natural resources and species than ever before, but we are losing both faster than ever. Protected areas, the cornerstone of the strategies of environmental NGOs, represent about 10% of the Earth's land surface. Most biodiversity on the planet today exists where people are trying to make a living. Human population—and, more important, human levels of consumption—are increasing. There are fewer resource frontiers on the planet than ever before. Extractive industries and small-scale producers leapfrog over each other, expanding into ever more remote regions of the planet. The goal should not be to put such producers out of business, but rather to ensure that they operate more sustainably so that they are still in business in 50 or 100 years. As a consequence, conserving natural resources, both renewable and nonrenewable, is more important than ever. Although most people understand the importance of conserving nonrenewable natural resources such as metals, oil, and gas, they often don't realize that current use rates of *renewable* resources (e.g., forests, fisheries, and topsoil) are not sustainable either. While these resources are theoretically renewable, they are being used up at rates that far exceed their regeneration.

Today the most polluting industries are those that extract natural resources. These include the timber and pulp industries as well as oil, gas, mining, fisheries and aquaculture, and finally and most important perhaps, agriculture. These extractive industries are responsible for most habitat conversion and biodiversity loss on the planet. They are not required to pay the full costs of production, e.g., environmental externalities. When industries aren't required to cover their true costs, they have no incentive to minimize those impacts. In some countries, producers have virtually no constraints, while in others, regulations—sometimes strict ones—govern production.

In commodity production, low-cost producers set prices and dominate markets. In extractive industries, the lowest-cost producers are

rarely the most efficient. Often, they don't have to comply with laws or regulations and can avoid the cost of the damage they cause. Globalization accentuates this trend. For example, the World Trade Organization (WTO) specifically excludes production, processing, and manufacturing (PPM) considerations as legitimate bases for governing trade. In short, this means that under the WTO a country cannot insist that its domestic producers, as well as all those who want to sell in its markets, adopt practices that reduce the environmental or social impacts of production.

For commodity producers, the situation is further complicated by substitutability. Many commodities can be substituted (e.g., vegetable oils, sweeteners, lumber, fish, wood pulp), so producers must also compete against those producing substitutable products, such as palm oil in Indonesia versus soy in Brazil, canola in Canada, or coconut in the Philippines.

The combination of competition for lowest-cost production and commodity substitution has pushed commodity prices down for the last century, even in the face of increasing demand. In 1900 US farmers received \$0.70 of every \$1 spent on food. Today, US farmers receive in the range of \$0.03 to \$0.05, or less. Low commodity prices make it difficult for producers to continue to produce in the short term, much less produce sustainably. These forces affect large corporations as well as every isolated individual or community that produces commodities.

As resources become scarcer, producers are inclined to produce more to increase their incomes rather than reduce their resource use. Special efforts will be needed to ensure that improved production practices do not translate merely to bigger and more capital-intensive production systems. Sustainable societies also need to create employment. Historically, those displaced by intensification of production

have moved into economically marginal, highly biodiverse areas.

A systematic adoption of better management practices (BMPs) by industry can help to mitigate damage caused by harmful practices. Better practices can occur at the level of production (e.g., more efficient use of inputs or reduction of waste) or at the larger landscape level (e.g., zoning to address carrying capacity issues that are larger than a single producer). The goal of BMPs should be to create new industry norms. Each industry, along with academics and scientists, consumers, government officials, NGOs, and other key stakeholders in the market chain, must develop BMPs. These can become the basis for establishing management norms and standards, or for granting concessions and operating permits by governments. BMPs will increasingly be used as screens for investments by multilateral and bilateral agencies as well as by private investors. Insurance companies are also interested in using BMPs to help establish risk and liability levels and to set rates. A number of institutional purchasers want to use BMP screens to ensure that the products they sell are responsibly produced. In fact, these uses of BMPs will push industries to move toward some form of third-party certification.

Several strategies could encourage business to reduce its impacts. These fall into two broad categories at separate ends of a continuum. One category, summarized as “do no harm,” aims to minimize the impact of business by creating, tightening, and enforcing rules and regulations. The role of NGOs and donors is that of watchdog; they can effectively identify the worst industrial practices and help to establish minimal standards. In the past, the success of such work depended on the ability and the will of government to enact and enforce legislation, often with NGOs threatening or actually taking lawsuits to force action. Today, the approach depends more on NGOs’ ability to threaten a company’s market share. Battles are

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fought out in the press, with boycotts and demonstrations in front of businesses, and with shareholder resolutions.

The second category can be called “doing better.” The identification of BMPs for each extractive industry, starting with the ones doing the most damage, could have tremendous global results. Eventually, the “best” of the better practices could be turned into certification systems. But even if companies or entire industries are never certified, the adoption of better practices should be key to any market-based incentive system to improve performance. If innovators who develop these practices were to identify, document, analyze, and share their experiences more widely, it would reduce the slope of the global learning curve on environmental and equity issues.

These two strategies are not unrelated. Today’s BMPs could become tomorrow’s minimal performance standard for government licenses, concessions, and/or permits in forestry, fishing, agriculture, or aquaculture. To be effective, such strategies must involve private companies in finding solutions to global problems. Private capital flows to developing countries are now five times greater than governmental development assistance. Private enterprises produce various

goods and provide a range of services that will either increase or decrease global environmental and development challenges.

## RESOURCE RIGHTS

Resource tenure is a critical precondition for successful CBNRM, because resource users need clearly defined ownership or use rights in order to make the financial and personal commitments necessary for effective on-the-ground programs. Changing definitions of rights are being incorporated into constitutions and laws that could have a tremendous impact on future CBNRM work. Since 1950, countries have written or revised some 3,000 constitutions. One of the most redefined issues is resource rights. Historically, as resources become valuable, states lay claim to them, often splitting rights that were

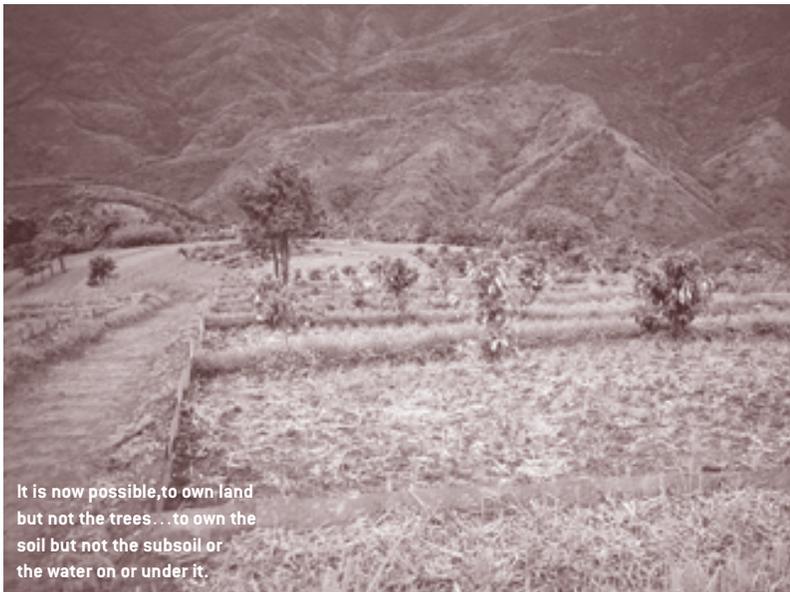
once bundled together. It is now possible, even common in many countries, to own land but not the trees or the animals that live on it; to own the soil but not the subsoil or the water on or under it; or to own the trees but not their genetic material.

Donors could link aid to guaranteed community resource rights. It is more effective and will ultimately lead to greater equity if the focus of resource ownership and management is at the user level. As government begins to see benefits derived by devolving management to resource users (e.g., increased revenues and participation, or decreased need for emergency programs), it is likely that joint implementation and co-management schemes will become realities.

Interesting strategies could be pursued to facilitate the convergence of local resource rights and management with income generation. Many indigenous peoples, for example, retain a portion of rights to areas that they otherwise gave up to colonial powers. In the US, Native Americans retain such residual usufruct rights over many areas, which are sometimes 10–100 times larger than the areas to which they currently have complete rights.

Globalization will have a tremendous impact on the “harmonization” of resource rights. Under the Convention on Biological Diversity, for example, states asserted sovereignty over all genetic matter within their borders. At the very least, states will set the rules of access to resources, but in most instances their intent is to own them as well. This could be a very important issue in the future, as companies scour the planet for commercially useful genetic material.

A related issue is intellectual property rights (IPR)—patents, copyrights, trademarks, and trade secrets—that now represent a highly contentious issue in international development. There is growing awareness of the “knowledge-based economy,” in which an entity’s chief assets are not so much physical capital as good ideas. IPR



gives entities and individuals a way to control information and use it for competitive advantage.

Two particular forms of assistance could help natural resource-dependent communities: contracts to protect their current and future rights to materials, and establishment of legal mechanisms to protect indigenous knowledge and inventions. Groups need to know how to write contracts that protect their rights to the materials' unique properties. Examples are including benefit-sharing language in contracts for bioprospecting or pharmaceutical development, or including text in purchase-and-sale contracts that would convey the commercial use of materials to others but prohibit them from domesticating or cloning unique wild materials without sharing the benefits with local groups.

Another area for IPR protection is "farmers' rights." Often, small-scale farmers have selected for, and maintained over time, considerable genetic variability. With increased interest in genetic engineering, genetic modification, and the likely impact of global warming on food production, unusual varieties of common food crops and animals are likely to become more valuable. If they extend the range of crops, reduce input needs or pest damage, or meet new market demands, the people who have identified and maintained those traits should benefit.

### **The Case For New Approaches**

The traditional focus of CBNRM programs has been to help reduce the environmental impact of resource use and increase the income of communities that live in relatively undisturbed habitats. In the face of declining commodity prices around the world, maintaining current income levels will be difficult. Promising sectors where the CBNRM focus could be expanded to better meet its goals include

agriculture, product certification, energy, water, and environmental services.

### **AGRICULTURE, EQUITY, AND THE ENVIRONMENT**

About 1.2 billion people on the planet live in extreme poverty with incomes of less than a dollar a day. Three-quarters of them live and work in rural areas. Global inequity will be addressed, if at all, in the countryside. Success will be accomplished by making poor farmers more efficient and larger agricultural production systems both more efficient and more equitable for laborers.

While yields and total food production are still rising, rates of growth have been declining since the early 1980s. Since 1984, the per capita grain harvest has declined by 1% per year. Serious declines in per capita food availability have occurred in sub-Saharan Africa and South Asia, and lesser declines in Latin America and the Caribbean. New threats may also have significant impacts on agriculture. The Intergovernmental Panel on Climate Change projects that global warming will reduce crop yields in the tropics. Water scarcity will be aggravated in many places, and the number of people exposed to diseases such as malaria, dengue, and cholera will increase. In short, climate change will wreak havoc on the lives of hundreds of millions of poor families, particularly in the tropics.

### *Environmental Damage*

By many measures, agriculture is the largest industry on the planet, employing an estimated 1.3 billion people directly and each year producing \$1.3 trillion worth of goods (farm gate price). Total agricultural land (crop and pasture) is 4.9 billion hectares (ha)—greater than all the forests and woodlands combined.

Agriculture has taken a heavy toll on the environment. Poor cul-

tivation and irrigation techniques and excessive use of pesticides and herbicides have led to widespread soil degradation and water contamination. Approximately 300 million ha of agricultural land worldwide are now severely degraded; a further 1.2 billion ha—10% of the Earth's vegetated surface—are at least moderately degraded. To date, agriculture has had a greater impact on biodiversity, habitat, and ecosystem functions than any other human use of natural resources.

Moreover, the damage caused by agriculture will increase as consumption patterns change. Globally, diets are in transition from largely vegetarian to more meat-dependent. When 10% or fewer of calories are obtained from animals, no intensive feeding is necessary. However, when 25% or more of dietary intake comes from animals, feeding operations are required. Such a change in diet, already occurring

in China and other countries, represents a net doubling of crop harvests used for human consumption.

Competition that continuously pushes producer prices downward, as well as the substitutability of many agricultural commodities, poses serious threats to sustainable production. Agricultural production must be sustainable. Once habitat has been converted for agricultural use, it should be farmed so that it could be farmed forever. However, it is estimated that only 10–20% of all agricultural land could be used indefinitely under existing production practices.

### ***Better Management Practices— Reducing Impacts and Improving Efficiency***

An effective CBNRM strategy should help producers be more sustainable and productive to prevent uncontrolled agricultural expansion. BMPs for agriculture can reduce the social and environmental impacts of producing a crop in a number of different ways. Adopting BMPs can reduce soil erosion by as much as 95%. Commercial banana production systems at Earth University in Costa Rica reduce pesticide use by 75% and plastic by 67%. Some 75% of sugar cane plants are waste, but in typical growing systems the waste is burned rather than applied to the fields where it can increase productivity and reduce the need for fertilizer, pesticides, and water. Using large quantities of water on crops that have been grown with extensive chemical applications compounds the damage by dispersing chemicals into freshwater systems.

The challenge is to use available resources better. The identification, analysis, and adoption of BMPs will depend on the scale and intensity of operations, cultural and geographic constraints, and the amount of capital or labor available to invest. Even so, enough is known about BMPs for most agricultural commodities to reduce significantly the impacts of entire industries.



Soy production in the Amazon has grown rapidly as a result of increased animal feed demand in China.

Adoption of some BMPs can be expensive. Raw materials represent a small fraction of the cost of any finished product, so market demand for such products will likely continue. However, to make the needed investments, producers must be confident that one or more of the following results will be achieved—reduced costs in the near term, longer life for the production unit, higher productivity, or higher prices in the marketplace. If more than one of these results occur, it will make payback even more rapid and further encourage the adoption of BMPs.

Once BMPs have been identified for different commodities, they could become the basis of both investment and purchase screens. Considerable effort has been spent to persuade millions of consumers to buy “green” products. More effective market-oriented campaigns should focus on the 300–500 buyers in large multinational companies that purchase 75–80% of the raw materials traded internationally. These people make the choices that affect what consumers can buy.

### *Equity and Labor Issues*

Agricultural laborers are among the poorest people on the planet. As agricultural production systems increase in size and intensity, they tend to become more mechanized and to employ more part-time laborers. Any program whose goal is to reduce rural poverty should require that BMPs are developed that have a positive impact on the rural poor.

One way to make working conditions more equitable in large-scale agricultural systems is to document the positive effects of improved employee benefits programs or incentive systems. Providing benefits like health care, literacy education, and training often results in reduced labor turnover rates and costs. A farmer in Northeast Brazil developed an education program for his employees (70% were illiterate), and within three years his turnover rate declined from 50% per year to 12%. The savings covered the costs of the program. Other

## BMP Work on Shrimp Aquaculture

**Since 1998, the work of a consortium** (The World Bank, the UN Food and Agriculture Organization, the Network of Aquaculture Centers in Asia-Pacific, and the Worldwide Fund for Nature) on Better Management Practices (BMPs) for shrimp aquaculture has identified dramatic differences stemming from better and worse practices. By implementing BMPs, better shrimp producers recycle their water and use 0.125 m<sup>3</sup> of water—versus 75 m<sup>3</sup> for some other producers—to produce shrimp for a 4-oz. cocktail. Better producers use 0.7 kg of wild fish to produce 1 kg of shrimp while worse ones use 3 kg or more. Similarly, better producers release cleaner water than the water they take into their operations. Better producers use no medicines, while worse ones use them routinely. The situation is similar with energy, chemicals, and other inputs. BMPs are not limited to technical on-site operations. They also apply to zoning, carrying capacity, and regulatory systems of government.

Some of the more interesting findings from the shrimp work include:

- There are no “best” practices at this time, only better ones. Better practices, however, are far superior to worse ones, often reducing impacts from 50–99%, depending on the activity.
- Most environmental and social impacts result from only a few (3–5) activities in any single operation and only a few more (8–10) for the entire industry.
- BMPs and incentives for labor can increase productivity fourfold.
- In two-thirds to three-quarters of the cases studied, adoption of BMPs paid for themselves within 2–3 years.

## Palm Oil and Social Equity in the Amazon

**The largest oil palm plantation in Brazil** is near the town of Belem. Part of the plantation is certified organic, but the costs of organic production are so high that the company cannot certify more of its land and remain viable. Unilever is the dedicated buyer for its organic palm oil and would like to purchase more if organic production could be increased.

A proposal is being developed by ICCO (a Dutch development agency), CUT (the Brazilian National Labor Union), Rabobank, and other organizations to train a few hundred small farmers who live near the oil palm refinery to be certified organic oil palm producers. One goal is to stop the traditional procedure: farmers' further clearing of Amazon forest when current farmland declines in fertility. Because they use family labor, they can produce palm oil at considerably lower cost than larger plantations. In exchange for dedicating their production to the local processing plant, they will be given the option of buying equity in the processing plant so they can benefit from the value that it adds to their palm production.



Raising palm oil using family farming is less costly than plantation growing.

companies have spun off business support activities (e.g., cafeterias, transport, and laundries for uniforms) to be owned and run by worker cooperatives. One Colombian company built a mangrove biofilter to treat effluent from its shrimp ponds. It then gave workers the right to harvest wood and poles as a way to stimulate tree growth and increase nutrient uptake.

Incentive systems extend equity to people working at the lowest levels as well as provide new information for companies, improve efficiency, and raise profits over time. The value of shrimp produced in Peru, for example, is nearly 4 times per ha more than in Honduras. The main differences in the production systems are worker incentive programs and reducing the size of ponds in Peru to a level that individual workers can manage. Incentives are based on net profits, so Peruvian workers reduce feed use. This not only lowers costs but reduces water quality problems and disease incidence, so the shrimp grow to larger, more valuable sizes. The workers receive higher incomes and the owners have more profits.

### CERTIFICATION

Certification systems assess operations against criteria that ideally represent accepted best practices in an industry. The approach has appeared in almost every major industry. Certification can improve working conditions and promote more environmentally friendly production. Certification mechanisms include documentation in a code of conduct and specific monitoring and reporting mechanisms. An optional ecolabeling component may be added when appropriate.

The strength and influence of certification programs are increasing. The battles over forest-product certification show that reporters, consumers, and NGOs can quickly detect and publicize weak standards or inadequate enforcement and that companies can be voluntarily influ-

enced through market mechanisms. They can also mobilize support for more stringent and effective codes and monitoring programs. Applied in countries with few or ineffective labor and environmental regulations, certification can help governments identify and adopt better standards, which may in turn be the basis for permitting and licensing.

The long-term credibility of each certification system will depend on its transparency as well as on the degree to which it assesses the chief impacts of production. Credible certification systems require a set of standards and criteria that have been developed through a wide-scale stakeholder dialogue. Such programs must also have internal integrity. Principles must be adhered to in the application of the program on the ground. Standards need to address whether it is possible to be certified without meeting one or more stated standards of the certification program.

### ***Timber Certification— The Forest Stewardship Council (FSC)***

Within a decade, timber certification has emerged from an idea to a significant component of forest management. Forest certification arose as an independent verification of more sustainable forest management practices. Labeling allowed certified products to be sold into discerning markets. The initial focus was on tropical forests, but today more than 80% of certified forests are in the North, reflecting a similar total market share of Northern producers. Certification has grown significantly because proponents have catalyzed both supply and demand.

The FSC, with the most influential timber certification standards, is an independent NGO founded in 1993. Today, it receives some \$1 million/year in fees from wood it certifies. Certification fees currently amount to 0.5% of the value of the wood sold. The FSC provides two forms of certification: the forest management certificate and the

chain-of-custody certificate that tracks the wood from the forest to the consumer. Through May 2001, the FSC had certified more than 1,700 companies' operations on more than 20 million ha of forest in 35 countries. FSC-certified forests accounted for more than 5% of production forests and 1% of total production.

During the development of the FSC program, it was assumed that consumers would pay more for "good" wood. This has not been borne out by experience. Most companies pay a premium for FSC-certified products, but often they do not pass it on to the consumer. With 700 companies expressing a preference for FSC-certified forest products, demand is growing considerably faster than supply. Consequently, premiums ranging from 4–100% have been paid for FSC-certified wood, depending on the species, market, and source country.

For producers, FSC certification appears to pay for itself. Asi Domain found that its operations are now 5–8% more efficient as a result of FSC-approved management practices. At an annual cost of 0.5% of production value per year, the company will make money from the FSC program even without a price premium. Such financial impact, if documented, may spur FSC certification and convince companies to adopt FSC management practices even if they are not yet certifiable.

Communities find forest certification costly, however. In addition, they suffer from a lack of market information and of access to markets for certified products. Most communities do not have the business skills necessary to support certified forest operations. Although millions of dollars have been spent (by bilateral/multilateral organizations and others) to develop the FSC standards and to help communities develop management plans and otherwise prepare for FSC certification, ultimately these programs should be self-supporting.

### ***Organic Agriculture***

Organic agriculture is market-driven, and those markets are rapidly increasing. Farmers now produce organic crops on 2.8 million acres and market organic foods in 130 countries with \$22 billion in sales. Organic agriculture is a valuable market niche. It has not yet, however, captured a significant portion of the overall market (>20%) nor led to any significant changes in the way most agriculture is practiced in any country in the world.

Even so, organic farming is big business, and economies of scale have hit organic farming as they have every other certified industry. Today, five farms control half of the \$400 million organic produce market in California. Consequently, the price premium for organic food is shrinking, tending to drive many of the smaller producers out of business.



Rapid demand for organic food in developed countries is creating temporary supply gaps that present opportunities for developing countries. In the UK, for example, consumption of organic food is increasing 40% per year, while production is increasing only 25% per year.

Organic producers in developing countries have two main advantages. Because farmers in developing countries have generally used fewer chemicals, when they switch to organic methods production bounces back more quickly. It can take 4–8 years to restore agricultural production in fields that have previously been farmed intensively with chemical inputs. In some developing nations, organic production may be missing only the certification, having been practiced forever. In these areas, production will increase through the adoption of up-to-date organic methods. Lack of awareness of organic farming systems and lack of certification systems for some tropical crops are major constraints against converting to organic production. Other impediments include:

- Costs of certification (can be as much as 5–30% of farm gate prices);
- Competing certification systems, with different utility in different markets;
- Lack of information on financial risks/benefits for converting to organic;
- Managerial costs and the risks of adopting new farming methods;
- Lack of infrastructure, marketing facilities, and/or expertise;
- Tariffs and import taxes (for exported produce), which increase prices to the consumer;
- Limited access to capital; and
- Inability to capture economies of scale.

Strategies to enhance organic production and export capacity in developing countries could focus on providing high-quality inputs

such as improved seeds, as well as information on topics from production methods to markets. It is very hard for producers in developing countries to label their product “certified organic” for international markets so long as the US and EU have not harmonized their standards. As with most certified products, building effective, long-term partnerships and infrastructure will also be key.

## ENERGY

Energy-related issues and CBNRM overlap in three areas that warrant attention. First, governments and corporations are searching for energy supplies in the most remote places on the planet, potentially displacing rural populations and degrading resources and ecosystems. This threat will become more urgent if new fuel discoveries decline and energy prices increase.

Second, natural resource-dependent communities could benefit directly from the sale of energy. Mineral rights have already been separated from land ownership in most places, but not everywhere. Local communities need advice on how to negotiate for better returns (direct or indirect) from energy-generating activities on or near their land. Solar, wind, geothermal, and tidal energy generation offer opportunities to some communities to sell energy onto the grid.

Third, many isolated, rural, or forest-based communities do not have adequate energy for their own purposes. Collecting and preparing firewood and animal manure for fuel not only often degrade the environment but also require labor that could be spent more productively on other activities. If their time is taken into account, many rural community members spend more on firewood for energy than do their urban counterparts. In Uganda, for example, this figure is up to five times as much. Lack of energy is often cited as the main reason for the lack of value-added processing and manu-

facturing in rural areas, as well as for large post-harvest losses of perishable food items produced there. Indeed, most economists argue that development depends upon energy consumption, so energy use should be encouraged in developing countries.

Isolated communities may have access to energy, but in forms whose production damages both human health and the environment. A World Bank study in China showed that the use of dirty fuels alone prevents some 20% of potential economic output because it harms human health. In India, dirty fuels cause some 2 million premature deaths a year—particularly among women and girls, who do most of the cooking, and young children, who spend a lot of time indoors.

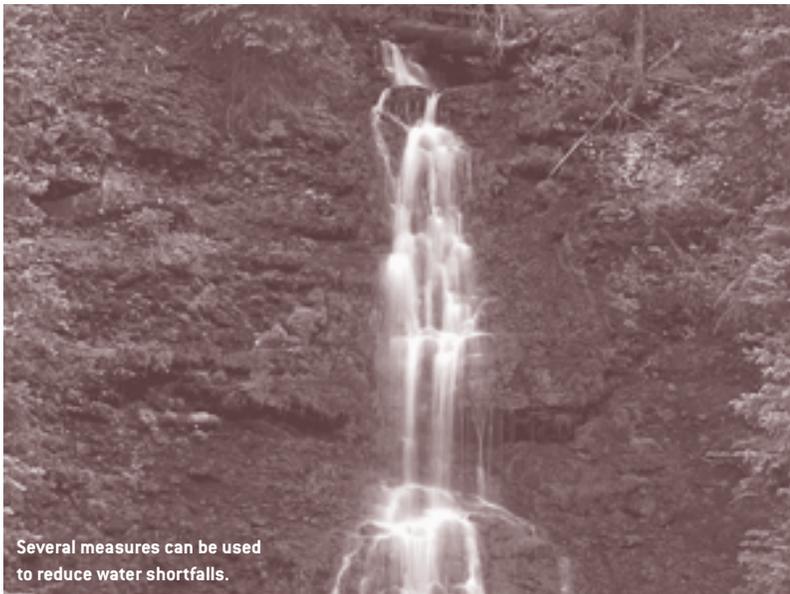
One way or another, the energy needs of developing countries will be met. Two-thirds of increases in energy demand in the next 20 years will be in developing countries. After the rapid increase in oil prices in the 1970s, governments and companies alike invested huge sums to develop renewable energy. Even so, renewables (excluding hydroelectric dams) still produce less than 1% of commercial energy globally. Renewables performed well in terms of technology and cost, but they have not become widespread because the price of fossil fuels did not continue to rise as had been projected. Carbon taxes or carbon offsets would help boost renewables, especially in developed countries. In poor countries, micropower generated by renewables (off-grid or on mini-grids) may be far cheaper than extending the grids into isolated areas.

Globally, wind generation of electricity has nearly quadrupled over the past five years. Much of the progress in wind generation has resulted from improved technology. Today, the most efficient wind farms produce electricity for about 3 cents/kwh. The cost has dropped by 40% in the last five years. A recent survey suggests that US wind energy potential is equivalent to that of oil in Saudi Arabia. In fact, the electricity needs of the US could be met from just three

of the windiest states—North Dakota, Kansas, and Texas.

Wind-generated energy has some disadvantages, however. The regulatory structure for wind generation is complicated, with each turbine treated as a separate energy generation facility requiring separate paperwork. In addition, for wind generation to be “bankable,” at least one full year of research on wind intensity must be completed.

In Iowa, each quarter acre a farmer devotes to wind turbines can yield royalties of some \$2,000 per year compared to \$100 for corn. Farmers who can afford to invest in the wind generators themselves can make as much as \$20,000 per turbine annually. On Buffalo Ridge (in southwest Minnesota) steady winds blow 320 days of the year. The area has the potential to produce 3,000 to 4,000 MW of energy per year, enough to power about 1 million homes (Raloff 2001).



Generating energy is one thing; getting it to market is another. Some analysts think the development of transmission infrastructure is more important than increasing the efficiency of wind turbines. Many rural areas that are prime for generating electricity are not currently wired to areas with high demand. Upgrading or creating rural power lines would solve the problem, but it would cost about \$1 million per mile of transmission line.

The cost of solar energy, notably in Europe, has dropped remarkably. In the Netherlands, Greenpeace, Rabobank (a solar panel manufacturing company), and various municipalities have created a household solar unit that can be purchased for \$500 and repaid over 20 years. The government has subsidized half the cost for poor families. To date, tens of thousands of these units have been hooked into the grid. The project has accounted for a 25% increase in electricity production since January 2000.

Based on their experiences in Europe, Shell and Rabobank are proposing this technology for developing countries. In 20 years, Shell expects that half of the energy it distributes will be created from solar sources. It is now economically feasible to put solar technology into any community that gets 100 days of sun a year. Shell plans to test new solar technology in Brazil, Namibia, and South Africa and has been seeking different kinds of partners—NGOs, private companies, municipalities, and labor unions. The company will subsidize the initial projects, and the EU has agreed to put money into the program as well. Once the operations are up and running, “turn-key” packages can be developed for local distribution.

## WATER

Half of the world’s wetlands were destroyed in the 20th century. Many rivers are dead or dying. Other major rivers have so much water taken

from them that they barely reach the sea (Cosgrove and Rijsberman 2000: xx). Water services—irrigation, domestic and industrial water supply, and wastewater treatment—are heavily subsidized by most governments to provide low-cost water, food, and jobs, but the subsidies have perverse consequences. Users do not value water that is too cheap, and waste it. Conservation technologies are not financially viable, and incentives for innovation remain weak (Cosgrove and Rijsberman 2000: xx–xxi).

Irrigation accounts for nearly 70% of human water use. About 70% of irrigation occurs in Asia. Industrial activities and domestic/municipal use account for about 20% and 10%, respectively. Most water that is withdrawn for direct human consumption is returned as wastewater that is so degraded it must be treated before reuse.

Assuming current annual consumption levels, per capita availability of water will drop from 6,600 m<sup>3</sup> today to 4,800 m<sup>3</sup> by 2025 due to population growth (Cosgrove and Rijsberman 2000: xxi). This drop will not be felt evenly. Increased water withdrawal implies that water shortages will increase significantly in more than 60% of the world, including large areas of Africa, Asia, and Latin America. Shortages will lead to more serious conflicts. Several levers can be used to reduce water shortfalls. The expansion of irrigated agriculture can be limited, and water use for irrigation can be made far more efficient. Most important, water storage can be increased. Water needs to be priced at its full cost to encourage conservation and efficient use.

## ENVIRONMENTAL SERVICES

Most of the tropical world continues to experiment with indirect and complex interventions to promote conservation and development. Some nations, however, are using more direct contract approaches that rely on performance-based payments. Conservation contracting

***Like most forms of trickle-down development, indirect payments for environmental services are costly and ineffective. Studies show that direct payments cost less and are more effective.***

initiatives deserve a closer look from both practitioners and scholars.

Advantages include:

- Reducing the complexity of implementation under diverse conditions and allowing rapid adaptation over time;
- Strengthening the links between individual well-being and actions and habitat conservation—to give people a personal stake in ecosystem protection;
- Changing the role of local residents from adversary to collaborator;
- Encouraging beneficiaries of ecosystem services to pay for those services; and
- Achieving conservation objectives on a larger scale, in both the short and long run.

In the past, many policy analysts believed that environmental services could be supported only with indirect payments. For example, if you wanted a watershed area to remain protected, you would work with local residents to find alternative forms of income to take pressure off the forests that made up the watershed. Such projects required considerable time, more than most donors or many NGOs are prepared to give. Because the goals in each project vary, and activi-

ties usually focus on a single group or village, the approaches are not replicable. Finally, proposed activities are often less profitable than using resources less sustainably, at least in the short run.

Like most forms of trickle-down development, indirect payments for environmental services are costly and ineffective. Studies (e.g., Ferraro 2001, Ferraro and Simpson 2000) show that direct payments cost less and are more effective. In Europe, 14 nations spent some \$11 billion from 1993–97 to divert 20 million ha into long-term set-aside and forestry contracts (OECD 1997 as cited in Ferraro 2001). The Conservation Reserve Program (CRP) in the US spends about \$1.5 billion annually to remove 12–15 million ha of highly erodible land from cultivation. Such payments for environmental services are likely to be one of the few governmental transfers to farmers that the WTO will accept (Potter and Ervin 1999 as cited in Ferraro 2001).

Local governments and NGOs are making direct payments for conservation. In Costa Rica, local, national, and international beneficiaries of ecosystem services compensate landowners who protect ecosystems that provide specific services. The country's 1996 Forestry Law recognizes four ecosystem services—carbon sequestration, hydrological services, biodiversity protection, and scenic beauty. Land that buffers protected areas is often targeted as a priority.

Carbon sequestration is an environmental service that could produce a significant stream of income in the future. The Kyoto Protocol and continued scientific research will affect what types of carbon will be allowable as offsets. Three carbon sequestration pathways—terrestrial, geological, and oceanic—are being considered. Most of the research, however, has been technical, without addressing socioeconomic and cultural issues.

Carbon sequestration can be part of an overall carbon management strategy. However, energy and forestry projects face similar difficulties

demonstrating that they really reduce carbon emissions; difficulties exist as well with measuring reduction levels. Moreover, for most projects, it will cost much less per ton to measure carbon stock changes in large projects than in small ones. Once again, it may be hard for smaller producers to benefit from such programs.

Forestry and energy projects differ significantly with regard to permanence. A risk exists that carbon sequestered in a forest will later be released to the atmosphere. To address this problem, developing countries could limit the number of permits to cut trees in a region, ensuring that the carbon stored in forests would remain above a specific level. Organizations could purchase these permits and retire them, thus reducing total carbon added to the atmosphere. Alternatively, credit could be awarded for each year that one ton of carbon remains sequestered.

### **Opportunities To Improve Results In Traditional CBNRM Projects**

The search for higher prices for certified products and the diversification of income streams to include using natural resources in new ways to generate income should be fundamental goals of CBNRM projects. If equity is to be achieved for isolated communities, it will most likely come through some combination of these activities. For most communities, however, incremental income increases from improved practices (e.g., reducing waste or improving conversion efficiencies) will have the most immediate impact on financial well-being. These approaches, in fact, are linked. More efficient resource use is encompassed in most certification programs. Similarly, the skills and capacities that are required to become more efficient producers as individuals and groups are the same as those required to take advantage of new opportunities.

## TIMBER

The international timber trade is worth \$50–\$100 billion annually. While there are some 3 billion ha of forested land globally, about 90% of all industrial roundwood comes from <500 million ha of forests. The World Wildlife Fund estimates that the overexploitation of forests—for timber, fuel, agriculture, and other basic needs—has wiped out more than half of the world’s forests, most in the past 50 years. Global demand for wood could help to encourage more sustainable use of this raw material, but considerable assistance will be required to make this happen.

Certification may never be an option for most timber producers, and it may not even be the best way to improve resource management, resource use efficiency, or income generation from most forests. Certified forests account for only about 1% of product sales and only about 5% of forests currently under management. Improved management, increased conversion efficiency, and reduced inputs and waste are cost-effective practices regardless of certification status.

### *Increasing the Efficiency of Traditional Forest Management*

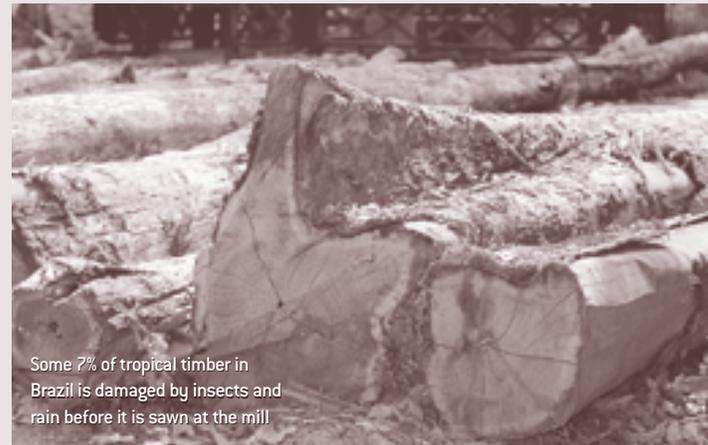
Forest management and use must be as efficient as possible, in order to reduce harvest rates and increase marketable products and sales. Returns and efficiencies are likely to be most meaningful in forests where selective cutting is the norm and where tenure or concession policies keep the same management group in place for more than a single cutting cycle.

Just as trees and logs should be used efficiently (i.e., the maximum utilizable product obtained from them), other resources should be, too. Logging roads, skidding trails, and depots should be built so that they do not require continuous costly maintenance. It is no more expensive

## Sawn Timber Conversion Efficiency

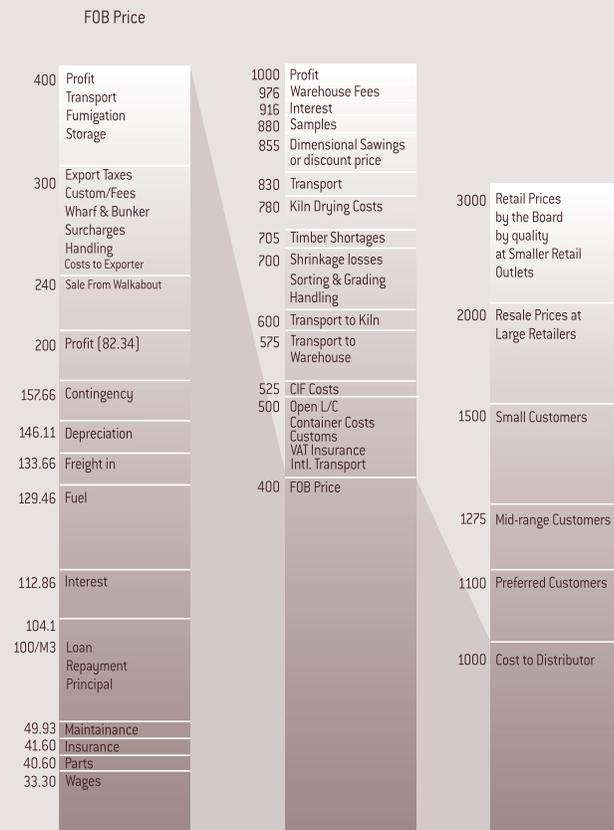
**Nearly 20% of the logs cut** in the Amazon are lost because cutters do not coordinate with skidder operators. Skidder operators compact the soil and damage twice as many trees (including commercially valuable ones) because mapping has not been done. Trails are cleared where there are no logs, and trails to get to logs are often not the ones needed to pull them out. Log depots are not strategically placed. Unplanned operations use 2.5 times as much land for depots per ha. Some 7% of tropical timber in Brazil is damaged by insects and rain before it is sawn at the mill. In addition to lost timber and environmental damage, operators also waste time and fuel.

In unplanned operations, for every 1 m<sup>3</sup> of timber harvested, 2 m<sup>3</sup> was damaged, 73 km of forest roads were opened, and 221 m<sup>2</sup> of canopy were opened (twice that in planned operations). Planned timber harvests extract an average of 25% more wood from 25% fewer trees than unplanned operations. The second cut in managed forests yields more than twice as much commercial timber as in unmanaged forests (Clay and Amaral 2000).



Some 7% of tropical timber in Brazil is damaged by insects and rain before it is sawn at the mill

## Papua New Guinea to the Netherlands Tropical Timber Market Chain (US\$ per M<sup>3</sup>)



to build higher-quality infrastructure. For example, Clay and Amaral (2000) report that planned logging roads tend to be 33% narrower than unplanned ones (and thus cheaper to build).

Improved efficiency can result from choosing machinery with the right capacity. One of the causes of environmental degradation in Indonesia today is pulp mills that were established with processing capacity that far exceeded the supply of raw materials from forest concessions and newly established pulp plantations combined. This has led pulp mills to source illegal logs to allow the plants to operate at their optimal capacity.

Consolidating sawn timber can also increase income. Markets will pay higher prices for larger volumes of wood, all else being equal. European buyers report that they would pay a 10% premium if they could buy whole containers filled with a single species of sawn wood. By contrast, mixed-species lots are discounted because of the work and time required to sort the different woods.

Value-added activities should make a product more valuable to a buyer. Opportunities to add value to forest products require less processing than for other products. Northern timber buyers will pay more for product that meets market norms in their countries; much tropical wood is substandard. Kiln drying, true dimensional sawing, sorting by species and dimension, and bundling so that wood can be moved in pallets all increase the value. The largest Dutch timber trader said that he would pay 50% higher FOB prices for tropical timber that met these requirements. He claimed his company could lower its price for tropical timber (see graph) and increase demand.

There is considerable evidence that in addition to technical improvements in production, social BMPs such as worker incentive programs increase overall productivity, reduce costs, increase net profits, and improve workers' income and job satisfaction. Certainly,

the forest industry encompasses many opportunities for workers to improve efficiency and increase profits once they are given appropriate incentives. Incentives will become an even bigger factor in plantation forests and out-grower schemes.

### **NONTIMBER FOREST PRODUCTS (NTFPS)**

NTFPs refer to a huge variety of materials derived from forests—bark, fruit, nuts, seeds, resins, and a wide range of plant and animal products. These items are used locally or sold to supplement income. Recent studies have shown that NTFPs may be far more significant economically, and for a wider range of people, than previously thought. Research in Brazil has suggested that the value of NTFPs is far greater than the value of the same land used to produce livestock, the main alternative in many areas. A recent study of 140 NTFPs in Cameroon (CERUT and AIDEnvironment 1999) suggests that NTFPs add 7.5 times as much to the regional economy, annually, as timber. Furthermore, harvesters receive about 46% of the value of NTFPs sold in the region.

One way to increase the income of NTFP producers is to understand how prices are built within a market chain—where value is added and taken away, where investments are required, where there are risks or other constraints, and where near monopolies that affect trade exist. NTFP producers around the world receive only a tiny portion of the value their product eventually garners at the top of the market chain. In 1988, for example, the gatherers of Brazil nuts, on average, received less than \$0.03 for the 3+ pounds of nuts they collected to make 1 pound of shelled product, which, once it reached New York City, would be worth \$1.20.

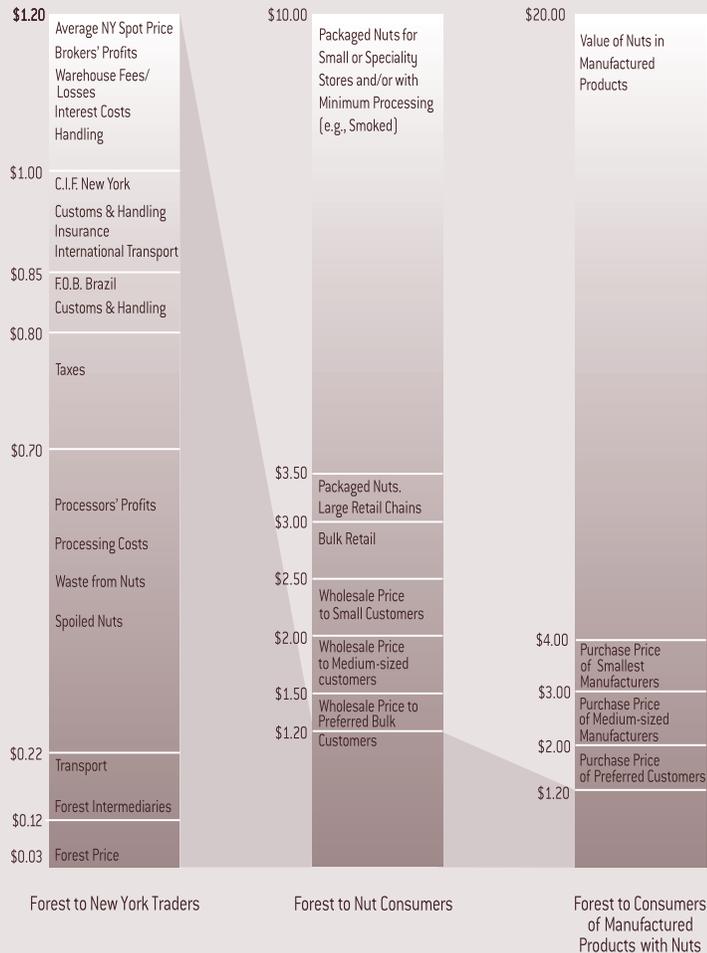
Cultural Survival Enterprises (CSE) pioneered rainforest marketing in the 1980s to help producers organize and market their own product in volume. Its strategy was to make changes at different points in the

## Economic Returns from Improved NTFP Efficiency

ACTIVITY	ECONOMIC IMPACT
Improve harvesting methods and efficiency in the forest	Increase income 10% or more
Reduce post-harvest losses through:	
• improved forest storage and/or transport	Reduce product losses by 5% or more
• improved local warehouses/storage	Reduce product losses by 25% or more
• improved transport to processing plants	Reduce product losses by up to 35%
Improve transportation through:	
• volume shipping	Reduce costs by 10% or more
• backhauling	Reduce costs by up to 50%
• processing product to reduce water & waste	Reduce costs by up to 70%
Hold product and sell in the off-season	Increase gross income up to 200%
Add value locally through processing	Increase gross income up to 500%
Obtain better pricing information	Increase income 10% or more
Improve credit terms	Reduce credit costs by up to 75%
Capture green premiums in Northern markets	Increase income 10% or more
Negotiate income-sharing agreements with manufacturers	Increase income 10% or more
Purchase consumer goods in bulk	Reduce costs up to 50%

Source: Clay 1996:ix.

## Value Added to Brazil Nuts



market chain. Some producers established their own shelling and export operations, and CSE became their import and distribution company. By organizing producers to gather and sell their unshelled nuts in larger quantities, the price paid to collectors was doubled. By shelling their own nuts and then sorting them by size, collectors could sell their product for up to 20 times as much as they did previously. Even so, this represented only about half of the wholesale price in New York.

In addition, CSE convinced Northern manufacturers and distributors to pay a 5% environmental premium on the New York spot price of the product. For manufacturers of food items, a 5% increase in the cost of a single raw material was not significant compared to their other costs. In fact, the payments brought them consumer goodwill that they could not buy through advertising. In addition, all manufacturers agreed to pay CSE a premium based on their profits. This, in turn, allowed nut gatherers to receive some of the value added during their product's journey to the consumer (see graph).

CSE's program worked because of its novelty and credibility (Clay 1996). In 1989, certification programs had not yet been developed for NTFPs. Instead, CSE developed dozens of supply contracts with each Northern company agreeing to pay an environmental premium (5%) and profit sharing, to buy all product through CSE or directly from producer groups, and to let CSE review all copy for ads and promotional materials. For its part, CSE agreed to ensure timely delivery of quality product to designated manufacturing or warehouse sites and guaranteed that 100% of all premiums and royalties would be returned to local producer groups and spent on specific types of projects (e.g., land rights, local organizing and capacity building, income generation, health, or education).

The CSE model included several strengths that current certification systems lack. First, CSE developed a trading organization that

streamlined the market chain and eliminated several layers of middlemen. Second, it guaranteed a premium to producers based not just on sales of raw materials but also on the profits of Northern purchaser companies. Third, it generated publicity (1,500 articles in 3 years), which not only created markets for existing products but encouraged other companies to become involved.

### HANDICRAFTS

Handicrafts were perhaps the first product marketed internationally with the explicit goal of increasing income of local producers. They have long been seen as a way to add value to raw materials locally and generate income for some of the poorest people in the world, especially women. The trade in handicrafts has increased tremendously and changed fundamentally in the past few decades.

International NGOs and development agencies, in addition to companies, began to supply designs and working capital to third world artisans and helped develop markets. During the past 30 years, “ethnic” crafts have been sold in most Northern markets. Alternative trade organizations (ATOs) helped with production and marketing. ATO sales are now declining, and it appears that many markets are saturated. Increasingly, the market demands uniform, “barely ethnic” products (ceramics, baskets, wooden items) that are made by hand but have little clear connection to local cultures. Craft people are also paid to produce striking and exotic items such as buttons that can be incorporated into the fashion designs of others.

As they engage in highly competitive markets, ATOs need to develop new strategies for working with artisans and for developing and promoting cultural products to meet rapidly fluctuating consumer demands (see Littrell and Dickson 2000). ATOs need to balance sustaining tradition while being flexible enough to alter some aspects of

products to make them more competitive. ATOs have learned that the product can carry the message, but the message can’t sell the product. ATOs can identify and communicate to artisans trends and elements that motivate Northern consumers’ buying patterns. By being more systematic in their collection of both qualitative and quantitative data, ATOs can strengthen their successes.

### ECOTOURISM

Ecotourism, or sustainable tourism, has focused on unique natural features, complex natural habitats, and/or local cultures, especially those of indigenous peoples. Lessons to date from successful ecotourism projects suggest that operations that are intended to be a viable part



Handicrafts have long been seen as a way to add value to raw materials.

of community-based natural resource management projects should:

- Ensure prior informed consent of all stakeholders, as well as their equitable, effective and active participation in ecotourism projects (and in other tourism developments);
- Acknowledge local peoples' right to say no to ecotourism developments in their areas;
- Ensure that local communities maintain control over both their resources and the degree to which ecotourism is allowed to affect them (and pace of such changes).

Ecotourism developments have begun to spring up all over the world, ranging from very small operations (e.g., for a half dozen people in Costa Rica or a small Mayan village in Belize) to gigantic in scope (e.g., Varig's 4,000-bed operation outside of Manaus, Brazil). Some of the operations tap into high-end markets (\$1,000 or more per person per night) while others target young backpackers (\$20–\$30 per night). A recent study has shown that in Costa Rica, some 90% of the revenues of traditional tourism end up outside the country. By contrast, some 38% of ecotourism revenues remain in Costa Rica.

In many African countries, ecotourism is the only growth industry. However, political turmoil and attacks on tourists in one country can threaten the industry in several countries. Most communities do not have the capacity to undertake the development of ecotourism on their own. Consequently, private-sector tour operators often benefit the most from community-based ecotourism, and local governments tend to siphon revenues rather than distribute them to local community members.

In general, there has been tremendous hope for ecotourism, but delivery on the promise has fallen short. Where it happens, outsiders have tended to make most of the money. Ecotourism should probably be only one component in an overall CBNRM program. Considerably

more coordination among value-added timber, NTFP products, handicrafts, and ecotourism is needed. With better coordination of goods and services in place, tourists would be able to support development work in many more local communities than they could actually visit.

## **Widely Applicable Lessons Learned From Traditional Projects**

There are several generic lessons that can be culled from the experiences of organizations working on CBNRM projects in different parts of the world. Certain underlying assumptions appear to contribute to the difficulties of delivering effective programs. These assumptions include faulty or incomplete definitions of community and natural resources and the conviction that certain partners would or would not be useful, or that grants are appropriate—and even the best form of financing—for CBNRM work.

### **EFFECTIVE PARTNERSHIPS**

The absence of effective partnerships may be one of the biggest obstacles to delivering results. Good partnerships allow donors to link more effectively with others and to piggyback on the work of others. Funds can be leveraged, as well as skills and opportunities. With effective partnerships, no single entity is responsible for all aspects of project funding, oversight, monitoring, capacity building, and maintenance. Choosing the right partners depends on the goals of a project. Each project requires different skills to make it succeed. Potential partners should also be evaluated on their ability to replicate the work in the future.

Partnerships with government can offer tremendous payoffs, for example in planning/zoning for natural resource use, subsidies, providing data on carrying capacity, and project replication. Unfortunately, people

working with communities on the ground are rarely adept at (and often ideologically opposed to) working with government, even though local communities could benefit tremendously from such work. Donors can help to ensure not only that work is done at both levels but also that good communication exists between them. The legitimate role for government should be encouraged. No other entity is big enough.

An important issue to address with government is how to reduce public subsidies (for agriculture, forestry, fisheries) that lead to the degradation of natural resources. Recent data suggest that it would cost only about *one-quarter* of what governments currently spend on environmentally harmful subsidies (about \$1 trillion per year) to conserve the planet's biodiversity. For example, protecting existing nature reserves could be accomplished for a small fraction of this amount (James *et al.* 1999). The global costs of greening forestry are estimated at \$34 billion, protecting freshwater supplies \$1 billion, and protecting coastal and marine ecosystems \$14 billion. Agriculture, at \$240 billion, would be the most expensive, but even this is less than current agricultural subsidies. If included in the existing WTO subsidy debate, such work could have a tremendous impact on global trade issues.

### ***Business Issues***

Businesses can bring useful skills to projects and may be able to help teach skills and share relevant information with local producers. The lack of business skills in communities and NGOs not only affects their internal operations; it also makes them problematic partners for businesses. Firms may act in CBNRM projects as traders, exporters, processors, importers, distributors, wholesalers, manufacturers, and retailers.

Many communities expect traders to assume many risks with little or no return, asking them to advance capital, hold product, absorb price declines and losses from unsold products—but to share any price

### ***Good partnerships allow donors to link more effectively with others and to piggyback on the work of others.***

increases and profits with the community. Putting so much of the risk on the trader/buyer while not rewarding the risk-taker with the full profit is not reasonable. Sharing some of that risk would make the operation more of a partnership, and it would build trust.

Large companies and banks find it difficult to work with small-scale producers. However, some new hybrid companies and corporate partnerships are attempting to create better ventures by having separate partners bring their respective pluses to the table: products, finance, skills, and access to markets. ICCO and Rabobank in the Netherlands have created a joint venture with a large juice processor/distributor (Rivella) and retailer (Ahold) in Europe and a cooperative Brazilian juice company (Amasfrutas) to supply the rapidly expanding European natural juice market. Because a European company is involved, the venture qualifies for subsidized EU credit and preferential import taxes.

Each partner brings something different to the table. The Europeans bring product ideas as well as marketing and sales skills. Amasfrutas handles local processing and relations with the producer and worker cooperatives that own Amasfrutas. The cooperative represents a few thousand growers. Rabobank brings the finance (fixed investments as well as working capital) to the venture. ICCO has covered some of the startup costs of creating the joint venture and helped to build trust among the different players.

### *NGOs as Partners*

Much of the work with CBNRM projects is funded and overseen by NGOs that are committed to addressing poverty and to reversing environmental degradation. NGOs first identified the potential of linking the two activities in constructive ways. While many NGOs are willing partners with donor groups in this work, very few have the skills to do all the work, or even to attract the people with the necessary skills.

Working with NGOs raises several issues. NGO leaders are often national or local elites, so working through them does not always mean that help reaches local poor communities. In some instances, NGOs have created businesses that directly compete with both local communities and the private sector. Some NGOs require local people to join approved labor unions, political parties, or religious groups in order to receive benefits. NGOs become dependent on donor funding. Local communities often become dependent as well, at least to the extent that NGOs shape the way they identify and solve problems. No problem is solved by writing a proposal.

In short, NGOs and donors can share biases that obstruct effective work. One such bias is that local communities cannot take proper advantage of CBNRM projects until they are well organized and have guaranteed land rights, adequate health care, and education for all. For NGOs, organizing can become an end in itself—so the real goals of poverty alleviation and resource protection are never addressed. In fact, improving income generation and natural resource management activities can begin immediately and can be relatively simple.

### **DONOR ORGANIZATIONS—GETTING SMARTER**

International funding has changed. In the past, donors were often motivated by compassion and good intentions on the one hand, or ideology and solidarity on the other. In either case, they tended to support what local groups said they needed. Over time, more sophisticated funders began to hire people with considerable experience to oversee their programs and to distribute funding through intermediary groups with the appropriate expertise working with local communities. Twenty years ago, funding was activity- and process-oriented. Today, the focus is shifting to measurable results, with monitoring and evaluation.

Donors have tended to give larger grants in recent years. Foundation staff have not increased proportionately, so program officers are responsible for larger budgets. Staff turnover and internal shifts cause many donors to lose critical skills. Finally, the existing internal accounting, reporting, and control systems that exist in many donor organizations today would not be acceptable by those same institutions for the grantees they support! These factors contribute to the lost opportunities to learn and the likely repetition of mistakes.

Clearly, more money is not the solution. In fact, less money—spent more intelligently, with longer time horizons, and with more technical assistance by more qualified staff—would be more effective. Donors do not have to do this themselves. Grants can be bundled, but there are legitimate transaction costs to administer small grants. It may make sense to work with government or the private sector if they can deliver results rather than to create less effective parallel organizations. Specific conditions of the project rather than rigid policies should guide such choices.

Increasingly, donors bring together diverse stakeholders to address complex issues. Internally, donors also realize that this work is too complicated for one program officer to handle. Some donors are working

more in teams and hiring consultants to complement in-house skills. Learning from experience means a lot more record keeping, monitoring, and evaluation. Unfortunately, most lessons have never been written down. Many lessons are learned from mistakes, and only the most confident are willing to make them public. In fact, learning, good or bad, is rarely shared within an institution and almost never outside it.

Donors are experimenting with ways to be more effective. Some are trying loans in addition to grants, but most do not feel comfortable managing loan portfolios. Yet, loans are essential for replicating successful business activities. As donors support different activities, it is better to identify and work with more qualified groups rather than simply demand that the needed expertise be obtained by an existing partner.

### INSTITUTIONAL CAPACITY BUILDING

Institutional capacity influences the ability of local communities to take advantage of CBNRM opportunities. If local institutions cannot guide the sustainable use of local resources or the spin-off business activities associated with them, CBNRM efforts will fail. By contrast, strong institutions increase the probability of sustainable management.

Successful CBNRM projects require local communities to make financial contributions in the form of labor, local supplies, products, or capital. Local institutions are more likely to be supported when they can point to concrete, positive results. Donors are investing in poverty alleviation and reduced environmental degradation. Local communities must understand that this drives donor interest and that donors have a right, and a responsibility, to see that they get results. On the other hand, donors should allow adequate time for real results to develop. Annual results, no matter how “soft,” are essential to justify the use of donor resources in one community or organization versus another. All involved should agree from the outset on the results that

will be delivered and on the monitoring systems that will measure them.

NGOs are not inherently either democratic or transparent. Officials are often little more than self-appointed individuals who coalesce around a common issue. At the very least, NGOs have their own agendas, which are rarely those of either donors or communities. While NGOs are increasingly required by donors to develop institutional capacity, they often develop such capacity internally without helping communities to do the same. Moreover, local communities rarely have any form of control over or accountability from NGOs.

One key form of capacity that is often ignored is entrepreneurship. Training entrepreneurs is important because in every country, small businesses provide more than half of all jobs. In Costa Rica, Earth University teaches business skills to students from poor, rural backgrounds who



commit to return to those areas and help others like themselves. The program focuses on managing resources sustainably in the humid tropics. Students from 17 Latin American countries attend, and more than 70% are on scholarships. Each student is required to complete the same coursework. In addition, they spend one day per week working in a local community with individual farmers and have a four-month internship in a community or with a local business. Most important, each student must create a business, write a business plan, borrow money (at 22% interest) to finance it, run it, sell product, close out the business and pay off the loan.

There is no other training program like this in the world, and the results are telling. Some 400 graduates are now working throughout Latin America. One has reduced chemical use in the orange juice industry in Costa Rica by 90% while increasing production. Another has created a business that recycles plastic ties and bags from the banana industry. Others have had similar strong results helping investment companies identify promising projects or companies and then trouble-shooting until the new companies become viable.

### **MONITORING AND MEASURING PERFORMANCE**

Results, not good intentions, make good programs. If results are the yardstick for effective programs, then better methods must be developed to measure performance. Moreover, the goal is to monitor performance toward specific goals or results. In many if not most instances, such goals will not have been met. This implies the need for adaptive feedback. Monitoring programs are not an end in themselves (e.g., a program passes or fails). Rather, they are intended to measure progress toward overall goals and whether changes should be made to better achieve them.

To date monitoring, has been far more limited. Most of those

funding or undertaking CBNRM programs have focused on safeguards to ensure that funding gets to the right people, that project goals are widely accepted, that proposed plans are appropriate and adequate, and that all the funding is accounted for at the end of the day. Such safeguards ensure accountability, but they will not ensure that the donor's overarching goals are being met. More important, this approach does not allow donors to evaluate whether better results could be achieved in other ways.

The challenge is not only to identify a set of usable performance measures but also to ensure that these measures accurately reflect true performance. Small, community-based, natural resource management enterprises present the additional challenge of requiring measures that are inexpensive and simple enough to be used by project managers and yet sufficiently precise to assess whether scarce resources are being used efficiently. Furthermore, performance has to be measured within a one to three-year project grant cycle. Donors may need to become more realistic and not expect big results in a short time. In addition, establishing baselines against which performance can be measured, and identifying causal links between programs (or their components) and results are important elements of performance measurement.

Indicators should serve as tools for learning how to improve performance rather than as ways to identify "good" or "bad" performers. Most of the monitoring and reporting undertaken to date is done because lenders or donors require it rather than because administrators actually use the information to change what they are doing. In a recent evaluation of eight small businesses in the Amazon (Clay and Anderson 2001), the only successful one was a small company that rewrote its business plan, on average, every eight to nine months to adjust its operations.

Monitoring requirements would be far more palatable to local com-

munities if they saw that donors also monitored *their own* programs and activities in order to understand and improve their overall performance. Another key issue is how donors react to failures. Important lessons could be learned from a lot more projects if those running them felt that failures are seen as sources of useful lessons rather than as signals for blame. Improved program monitoring can provide insights for improving performance, increasing results, and achieving overall goals, to the benefit of funders, NGOs, and communities alike.

### FINANCING ISSUES

Most donors realize that they do not have the capital required to support sustainable natural resource management or income generation opportunities at significant levels throughout the world. Consequently, they must be more strategic. They need to monitor, analyze, and disseminate information about their projects so that other groups can learn from them. Finally, they need to be more realistic about which potential partners have the capacity and interest to help roll out such programs in additional locales.

The demand for environmental products, the urgency of the biodiversity crisis, the concerns about global inequities and the conflicts they can cause, and the capital needs of small and medium-sized biodiversity-based companies provide a compelling rationale for attracting capital to community enterprises.

To meet these challenges, donors need to:

- Identify and explain the successes they have had;
- Show how to scale them up as well as reduce the risks that could lead to failure; and
- Ensure that the plans are not only financially viable but also creditworthy.

If these steps are absent, it will be hard to make CBNRM projects

### *Results, not good intentions, make good programs.*

anything more than highly subsidized, short-term efforts.

Data from Latin America suggests that between 1990 and 1997, 65 funders invested \$3.26 billion in biodiversity (Castro and Locker 2000). Other sources suggest that in Latin America more than \$1 billion is currently available from foundations, trusts, NGOs, local governments, and multilateral banks (Rubino 2000:37). Reasons why capital is hard to come by for CBNRM projects (Rubino 2000) include the following:

- Most biodiversity businesses are too small (<\$5 million) for standard institutional banks;
- Local bank debt is scarce and interest rates often prohibitively high;
- Local banks do not have information on returns on investments for these kinds of loans;
- Such ventures are seen as high-risk, costly transactions especially given their small size;
- Small to medium-sized private sector companies, no matter how large their actual or potential impact, fall outside the parameters of bilateral agency and foundation programs;
- Investment funds tend to focus on listed securities or unlisted infrastructure projects;
- Communal assets make both equity investments and exit strategies difficult;
- Few seeking investments know how to prepare business plans or marketing strategies, or even basic financial reports.

Basically, until income generation projects, community-based natural resource businesses, and product certification programs are run using basic business principles, they will not be creditworthy. The skills required will not develop over night, in most communities.

## Conclusions

CBNRM programs have captured the imagination of those attempting to reduce both poverty and environmental degradation. The approach offers a tremendous opportunity to focus assistance efforts on some of the poorest communities on the planet, which depend on some of the most fragile natural resources for survival.

Some early efforts to create sustainable livelihoods through community-based development were quite promising (e.g., wildlife management, NTFPs, handicrafts, ecotourism, community forestry, fair

trade, and certification). In general, however, the approach has not lived up to expectations. Whether the current approach has worked very well to date or not, most agree that some variation of the approach must be made to work. Intellectually, the approach is right; it just needs to work better in practical terms. On moral grounds, it has to work; isolated communities around the world cannot continue to be denied options that others take for granted.

Observations and recommendations for improving CBNRM programs come from many sources, but how they can be applied most effectively will vary tremendously. It is much more important to understand how to identify opportunities and solve relevant problems than to follow any specific course of action. The following ten themes should shape CBNRM work in the future.

**Appropriate Strategy.** In order to increase the chances that CBNRM work will deliver significant results at the national or international level, supporters need to evaluate their work on a regular basis, answering these questions at a minimum:

- Is the work, as it is currently conceived, applicable to most rural communities?
- Do the programs measurably improve resource use and income levels?
- Do the results justify the costs?
- Is CBNRM the best tool for the job?
- Are such programs replicable on regional, national, or global scales?

**Business Skills.** At the local level, both business skills and viable business models are lacking. However, most households and community-based enterprises are already businesses that produce and sell products. The difference now is the competitive pressure of a global economy. The vast majority of products produced in local communities



Most households and community-based enterprises are already businesses that make and sell products.

are sold in local markets, and this is not a tenable position in a global economy. Moreover, this is not an issue that affects only those selling into international markets.

**Efficiency.** The economic viability of most CBNRM strategies depends on the efficiency with which producers use their resources. Efficiency saves money and resources, reduces waste, and increases marketable by-products. Increasingly, efficiency makes producers more competitive in every market. It can increase income by 10% and often by much more. The skills needed to improve efficiency are the same as those required for more complicated value-added initiatives.

**Improve or Create Markets.** Successful CBNRM programs focus on expanding markets or creating new ones rather than on production alone. Markets change constantly. Knowing what to produce, when to produce it, how much to produce, and how to process it for the highest price are important issues for any producer. Producers need to go beyond what they want to produce and sell and begin to think more about what the market wants to buy. Very few NGOs have the expertise to offer such assistance.

**Create Multiple Income Sources.** In addition to increasing income from existing products, producers need to expand their scope. Modest increases in income are eroded quickly with population growth and increased demand on static resource bases.

- Potential sources of income to be evaluated include environmental services, IPR compensation, value-added production, different business structures and ownership models, and solar and wind energy.
- Potential income streams should require little labor. It is easier to grow carbon or protect watersheds than to harvest timber, sustainably or otherwise. Income from environmental “existence” values offers the largest returns for the least effort.

**Identify Synergies.** Every effort should be made to identify activities that can build on and reinforce others to compound positive results.

- Increased efficiency can lead to new business opportunities. For example, sustainable management of timber can lead to increased NTFP production, which can lay the groundwork for environmental service payments.
- Better practices can reduce environmental harm, increase profits, and reduce risks.
- Joint marketing or certification projects can provide financial incentives for communities to work together.

**Address Legal Issues.** Increasingly, communities need legal advice in several key areas.

- Communities need assistance when entering into contracts so that they know what problems and opportunities they can expect and so that they can recognize standard contract language.
- Communities need to know how to protect their rights to genetic and cultural material.
- Test legal cases could help establish precedents for new IPR interpretations.
- As natural resources or environmental services increase in value, efforts will be made to separate rights to them from those who have managed and maintained the resources.

**Monitoring.** Monitoring is essential to clarify whether stated goals and objectives are being met. If they are not, recommendations to achieve such goals need to be developed.

- Monitoring and evaluation require adequate and consistent baseline data and should provide quantifiable assessments of the impact of different interventions.
- Monitoring should provide feedback that can be used for adaptive management.

- Evaluations should provide insights about the replication of successful programs.

**Identify Partners.** No single organization will be able to reduce poverty or improve natural resource management significantly on a global scale. If those are the goals, then partners will be necessary. Government, business, and other donors are likely candidates. Each has obvious strengths and weaknesses that should influence selection. Bringing such players to the table early in the process will help them commit not only to the project in question but, more important, to refining the approach and strategies as well.

**Teach and Replicate.** No donor will support the same work indefinitely. Donors' goals involve identifying a problem, analyzing the most appropriate ways to address it, making intellectual and financial contributions to solving it, evaluating how to improve the work, and handing continuation off to others. Some of the most important lessons learned are listed here:

- An exit strategy for any program will encourage both learning and wider replication;
- Even successful programs are not replicated automatically. Replication will happen when programs are analyzed and the elements that make them work communicated;
- Those who undertake programs are rarely best equipped to learn the lessons from them;
- Lessons can be learned from failures as well as successes;
- Others will replicate work when it is in their self-interest to do so;
- There will never be as much to invest in subsequent programs as there was initially—thus it is important to identify the most essential activities and best strategies;
- Both interest in and replication of CBNRM would increase more rapidly if loans were the basis for financing such activities.

*Jason Clay, an anthropologist by training, is one of the inventors of green marketing. In the 1980s, he established a trading company within an NGO that developed markets for rainforest products with nearly 200 companies in the US and Europe (including Rainforest Crunch with Ben & Jerry's). Retail sales of rainforest products amounted to more than \$100 million per year by 1992. Dr. Clay has advised foundations and other donors, governments, private companies, and communities about income-generation and marketing strategies. He is currently Vice President, Center for Conservation Innovation, World Wildlife Fund, in Washington DC.*

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