

HEALTHY FORESTS: SOUND ECONOMICS, SOCIAL JUSTICE

Jerome Vanclay and Ravi Prabhu

Jerome Vanclay and Ravi Prabhu are project leaders with the Center for International Forestry Research in Bogor, Indonesia.

Forest management was once an arcane subject—the domain of foresters and a handful of politicians. Today, concern over the management of the world's forests is becoming a hot topic, and no area is under heavier scrutiny than the tropical forests. The current rate of deforestation, especially in light of the enormous number of species these forests contain, is the primary cause for this concern.

Despite this ominous trend, much can be done to protect and sustain these incredibly valuable resources.

SUSTAINABLE FORESTRY

Sustainable development means meeting the needs of the current generation without compromising the needs of future generations. This balancing act hinges on a fair and equitable distribution of resources.

Sustainable development does not necessarily preclude timber harvest or forest conversion to other land uses. Nor should it focus on the needs of future generations to the exclusion of the present generation. Indeed, our generation's quality of life would be greatly reduced without forest products. Nevertheless, it behooves us to manage forests for the greatest good for the greatest number over the long term.

Effective guidelines for sustainable forestry practices are easy to define.¹ For instance, harvest of timber and other products can be sustainable provided few nutrients are lost through leaching and erosion, soil disturbance is minimized, and natural habitats and processes are not disrupted. Thus, sustainable management of tropical forests, though challenging, remains feasible.

The first ethical imperative in the management of tropical forests is prudence; it is better to err on the side of caution and judge each scrap of biodiversity as priceless until we have learned how best to use and understand it.

Second, we must recognize that there is limited opportunity to protect remaining pockets of primary forests but great opportunities to protect, consolidate, and rehabilitate degraded and secondary forests. This may prove critical to the survival of species that require large forested tracts.

Many species are threatened with extinction because of forest fragmenta-

tion and invasion by exotic species.² Species that require large areas of undisturbed primary forest may be among the most susceptible. For most species, a system of linked, sustainably managed forests would provide sufficient habitat for their survival. This can be augmented by managing the large areas of secondary forests that are now available in the tropics.³

Currently, about 5 percent of tropical forests are protected in national parks and reserves. These areas cannot provide for the survival of all species, so the ultimate fate of many species will depend on the management of land around these protected areas. The best protection for plant and animal species may be to preserve representative primary forests and surround them with a protective buffer of managed forest zones. Sensitive management of buffer areas for timber and other forest products would help preserve the integrity of reserves and balance conflicting demands for production and preservation.

DESTRUCTIVE HARVESTING

The key, of course, is sensitive management. Often, logging is simply an accessory to land clearing. In other cases, the timber harvest is unsustainable because of poor supervision and training of loggers. Good harvesting practices depend on investment, supervision, training, and a long view to the future. These practices may be hampered by the short-term outlook of politicians and concessionaires eager to turn a quick buck.

Timber harvesting and the landless poor often work in concert to deforest a region. Loggers build roads and cut the commercial trees, while the poor destroy the remaining vegetation for subsistence cultivation. But people settle on what they regard as underused land even when there is no logging. Putting an end to the timber harvest may neither cure the problem nor stop deforestation. Instead, the focus should be on solving the problems that cause poor people to migrate to areas that cannot support them.

If the flow of migrants cannot be stopped at its source, one solution may be to grant these people a limited right to occupy the land if they abide by a suitable and sustainable cultivation system. Such an arrangement requires trust between forest managers and squatters. Otherwise, farmers may fear they will be dispossessed of their land when the trees mature. Thus, part of the solution to the problem of deforestation involves more equitable participation in the management and sharing of benefits of all forest products among all involved.

Some politicians advocate transmigration schemes to move people from overpopulated to underpopulated regions, but these schemes are destined to fail. For one thing, they rarely address the fundamental problem of unsustainable population growth. And second, these schemes inevitably transfer problems, creating new social and environmental problems at their destination. There are usually good reasons why some areas have remained underpopulated—including diseases and limited land capabilities—and infusing them with more people will only exacerbate those problems.

Soil amelioration and new plant varieties may overcome some of these problems, but many other problems will remain. Foremost among them is that many migrants do not have the experience, training, or funds to contend with the new problems they will face. Thus, many of these lands are doomed to be degraded and abandoned.

The heart of the problem of deforestation may be agricultural cash crops cultivated at both the commercial and family scale. Sugar, rubber, palm oil,

The best protection for plant and animal species may be to preserve representative primary forests and surround them with a protective buffer of managed forest zones.

coffee, cocoa, tea, and other crops are now produced on land that once supported tropical forests. Such crops are eagerly sought by the same developed nations that would ban tropical timber harvesting. At the same time, these crops provide an important source of employment and income for the people of developing nations. Many of those who rely on these products for their livelihoods have few alternatives, and any abrupt decrease in demand may force them to begin new deforestation for subsistence agriculture.

Urbanization is also taking its toll. In Java, for example, development is claiming some of the most fertile agricultural land in the country. In an effort to compensate for this, large areas of tropical peat swamp forest are being cleared on land that is at best marginally suitable for rice production.

TALL CHALLENGES

Among the most important issues for tropical forest management is the cycle of poverty and overpopulation, which ranks among the world's most pressing problems.

Among the most important issues for tropical forest management is the cycle of poverty and overpopulation, which ranks among the world's most pressing problems. This cycle is self-perpetuating; worldwide poverty will escalate until population growth stabilizes, and the population will grow until poverty is alleviated.

While a lucky few with social security and pensions need not fear growing old without a family, the only source of social security and elderly care for most people is their children. Thus, the world's poorest people surround themselves with children who will care for them in their old age. At the same time, poor families often rely on subsistence farming, and having more children means more hands to work the fields.

The world's burgeoning human population already appropriates 40 percent of the Earth's primary terrestrial productivity, including timber harvesting, grazing, and agriculture.⁴ The population may double within the next 40 years if current trends continue. If so, what will be left of the world's resources for conservation and recreation?

It is easy, too, to focus on the demands made by the poor on the world's resources, but the world's wealthy and influential elite also play a critical role in shaping the future of the forest. The consumer needs of the developed nations, for instance, place enormous demands on tropical forests.

At the local level, the rich and powerful can also exact a heavy toll. One aspect of their influence was revealed recently by a commission of inquiry into the Papua New Guinea timber industry.⁵ The study exposed many politicians, several community leaders, and most logging company owners as corrupt in their pursuit of a quick profit. It goes without saying that the Papua New Guinea timber industry was not unique in this regard.

LEARNING CURVE

Education and information may help people recognize the value of forest resources, learn how to participate in land-use planning, and better understand democracy and the responsibilities it demands of politicians and constituents.

Proper planning of forest operations ahead of time, taking into account environmental and resource restraints, has been shown to have a beneficial effect both on the effectiveness of the operation and the health of the forests.⁶ Yet such planning is the exception rather than the rule.

Sustainable timber harvesting relies heavily on the skill of those who plan forest operations and those who wield the machinery, but training and incen-

tives for such operators often are neglected. Such negligence is inexcusable, not only because of the environmental costs, but also because of the high injury rate. Meanwhile, the alternative of reduced-impact logging remains cost-effective.⁷

Consider, for instance, that damage to uncut trees can be reduced if chain saw operators control the direction in which cut trees fall. Soil and nutrient losses can be minimized when tractor drivers are skilled and understand the consequences of improper operation.

Training can only increase the profitability of logging operations because it results in decreased fuel consumption, reduced breakage of timber and equipment, and enhanced productivity. Furthermore, careful harvesting not only saves money, but also saves lives, reduces injuries, protects the environment, and increases the value of future harvests.

Though proper harvesting practices are cost-effective, they require an up-front investment in training and equipment. And for such up-front investments to become attractive to logging firms, they must be supported by social, political, and economic stability. Sadly, few nations of the Southern Hemisphere enjoy that level of stability.

BETTER WAY?

Many critics of timber harvests contend that the world's timber should be taken from fast-growing plantations established on deforested land. Unfortunately, efficient plantation management requires large tracts of land, fertile soils, and sufficient rain. Few tropical countries are richly endowed with all three. Furthermore, fast growth usually means monocultures and reliance on fertilizers and pesticides, which incur additional environmental costs.

Boycotts on tropical timber have been promoted as one way to save tropical forests. While they have helped focus attention on the problem, they run the risk of being counter-productive. For one thing, they may convey doubt about future markets. Such doubt could eliminate the incentive to invest in sustainable forest management. For another, the threat of a boycott may provoke timber harvesters to hastily cut and sell their stocks of tropical woods at reduced prices, hoping to tap the market while it remains open. In some European countries, calls for boycotts of tropical timber resulted in consumers switching their preference away from timber to much more environmentally unfriendly materials, such as aluminum and plastic.⁸

To prevent these outcomes, developed nations must deliver a clear message that they will continue to purchase—and, ideally, pay a premium for—tropical timber produced in a sustainable way. Meanwhile, they should refuse to purchase wood produced in nonsustainable ways. New certification schemes for sustainable forest management are one mechanism for ensuring that consumers make the right choice when selecting timber.⁹ Based on independent, third-party assessment of forest management, these schemes have enabled responsible forest managers to deliver their products to discerning consumers, thereby guaranteeing the buyer an environmentally friendly product. Forest managers profit by gaining in market share and earning a sustainable income.

INTERNATIONAL STANDARDS

The prognosis for tropical forests would improve considerably if consumer nations imposed the same environmental requirements on the forest products

Careful harvesting not only saves money, but also saves lives, reduces injuries, protects the environment, and increases the value of future harvests.

The prognosis for tropical forests would improve if consumer nations imposed the same environmental requirements on the forest products they import as they do on the ones they grow at home.

they import as they do on the ones they grow at home. Such standards are necessary because many nations in the tropics are unable or unwilling to impose effective controls internally. Forest services in the tropics are often understaffed, ill equipped, and receive little oversight—a situation that limits innovation and invites corruption.

Work on standards for forest management in the tropics was catalyzed in 1990 when the International Tropical Timber Organization proposed criteria for assessing sustainable forestry. The criteria covered forest policy, national legislation, forest management, and socioeconomic concerns. Since then, a great deal of research and development has taken place, and criteria and indicators are proving to be key tools for the promotion of sustainable forest management.¹⁰ These tools not only provide the standards by which to judge forest management, they are also instrumental in leveling the playing field between different producers. On a national level, they are the tools by which countries can report back to the global community on how they are fulfilling the commitments they made at the Rio environmental summit in 1992.¹¹

Currently, few timber operations meet these standards, and excessive haste in demanding compliance may cause economic, social, and environmental difficulties. For instance, timber producers may convert forests to agricultural lands to grow coffee, cocoa, or other crops if they think the criteria are unattainable or if they do not get credit for the steps they take toward sustainability.

NEED FOR REFORM

Sustainable forestry requires a political commitment at the highest level, and this should be reflected in the policy, legislation, and actions of government. Present market forces seem ineffective in fostering sustainable forestry, so some controls are necessary. A national forest service should be adequately staffed and funded to supervise forest use. Furthermore, forest operations should be properly planned and conducted with due regard for other forest users and the possible consequences of logging.¹²

These forest-sector reforms, if they are to work, must be combined with land-reform initiatives. Land and resources are rarely distributed equally, but in many developing countries the inequality is extreme. The poorest people often have nothing and therefore have nothing to lose by destroying the forest. In Brazil, for example, 4.5 percent of landowners hold the title to 80 percent of the farmland, while 70 percent of rural families are landless.¹³ Unless these landless families find satisfactory employment, they have little choice but to encroach on underused forested land.

Land reforms must be accompanied by reforms in the way concessionaires are awarded contracts. Currently, many concessions are short-term agreements. Once the agreements expire, the concessionaires may lose their rights to harvest timber in a given tract. That right may go to a competitor. Rather than offer timber companies the incentive to harvest responsibly, such agreements invite the companies to take what they can before their contracts run out. Thus, sustainable management should award concessionaires long-term tenure on a given tract—conditioned, of course, on good performance.

Good forest management must rely on efficient provision of information to policymakers, politicians and their constituents. Sadly, however, reliable data are rarely available. Researchers must investigate the rate of deforestation and

the economic and ecological consequences of forest loss. And this information must be communicated clearly and concisely.

In many developing nations, women are the main users of the forest—and the main victims of deforestation. Because fuelwood is usually collected by women, deforestation means women must work harder to find fuel. Few women, however, are involved in forestry consulting and planning.

Moreover, many forestry schools are located away from other centers of learning and thus offer scant opportunity for forestry trainees to broaden communication skills.

Recent experiences in management of natural resources in the United States and Canada suggest that the first step to achieving sustainability is to follow an adaptive management philosophy.¹⁴ Adaptive management is an approach to managing complex systems—including ecosystems—that emphasizes conscious experimentation and learning. Key tools for the development of adaptive management systems are computer-based models, diagnostics, and monitoring systems based on criteria, indicators, and conflict-resolution tools. The development of such tools is well under way in research institutions around the globe.¹⁵

Together with initiatives to divest more control to local authorities and communities and the emergence of certification programs, adaptive management promises to put forest management in the tropics on the path to improvement.

While more research is needed on sustainable forestry, this is no excuse for inaction. Much can be accomplished by applying existing knowledge. Consider, for instance, that many forest services have useful information languishing in neglected trial plots and unpublished reports.

Furthermore, foresters in many tropical countries are well trained and may hold advanced degrees from prestigious universities, but they often don't know how to translate their knowledge into good forest management. This may be the result of an overemphasis on technical training at the expense of management expertise.

Meanwhile, many forest services lack good maps and reliable area estimates of their forest estates. These deficiencies can be overcome using satellite technology. Satellite data have proven useful for forest management and mapping, and global positioning systems have revolutionized forest surveying. They also provide an effective way to detect and monitor encroachment. Support, cooperation, and training in these technologies may provide a cost-effective way to improve information for forest managers.

CALL TO ACTION

Though foresters may look toward satellites for assistance, those who consume tropical timber must recognize that reform starts at home. We must learn to be selective and thrifty with the timber we buy, and we should ask our supplier where woods were grown and how they were produced. We should choose timber grown under sustainable conditions whenever possible, and we should buy labor-intensive goods manufactured in developing countries to boost employment and per-capita wealth.

Furthermore, we should lobby for reform in trade policies to stimulate trade with developing countries. Existing trade barriers cost developing countries more than U.S. \$100 billion a year in forgone income. What's more, half the developing-world debt is owed by 27 countries that possess 97 percent of the

In many developing nations, women are the main users of the forest—and the main victims of deforestation.

world's tropical forest. These debts are increasing every year.

It should be obvious by now that there are things we as individuals can do. While a single individual's contribution may seem small, there are many of us. The important thing is that we begin.



NOTES

1. J.K. Vanclay, "Environmentally Sound Timber Harvesting: Logging Guidelines, Conservation Reserves and Rehabilitation Studies," in H. Lieth and M. Lohmann, eds., *Restoration of Tropical Forest Ecosystems, Proceedings of the Symposium* (Dordrecht: Kluwer Academic, 1992), pp. 185-92.
2. J.A. Sayer and T.C. Whitmore, "Tropical Moist Forests: Destruction and Species Extinction," *Biological Conservation* 55 (1991), pp. 199-213.
3. B. Finegan, "The Management Potential of Neotropical Secondary Lowland Forest," *Forest Ecology and Management* 47 (1992), pp. 295-321.
4. P.M. Vitousek et al., "Human Appropriation of the Products of Photosynthesis," *BioScience* 34 (1986), pp. 386-373.
5. G. Marshall, "The Political Economy of Logging: The Barnett Inquiry into Corruption in the Papua New Guinea Timber Industry," *Ecologist* 20 (1990), pp. 174-181.
6. J. Hendrison, *Damage-controlled Logging in Managed Tropical Rain Forest in Suriname* (Wageningen, the Netherlands: Agricultural University Wageningen, 1990).
7. D.P. Dykstra, "FAO Model Code of Forest Harvesting Practice," (Rome: Food and Agriculture Organization of the United Nations, 1996).
8. K.L. Brockman, J. Hemmelskamp, and O. Hohmeyer, "Certified Timber and Consumer Behavior," *The Impact of a Certification Scheme for Tropical Timber from Sustainable Forest Management on German Demand* (in German) (Heidelberg: Physica-Verlag, 1996).
9. C. Upton and S. Bass, *The Forest Certification Handbook* (London: Earthscan Publications, 1995).
10. R. Prabhu et al., *Testing Criteria and Indicators for Sustainable Management of Forests; Final Report of Phase I* (Bogor: CIFOR Special Publication, 1996).
11. H. Granholm, T. Vähänen, and S. Sahlberg, *Background Document: Intergovernmental Seminar on Criteria and Indicators for Sustainable Forest Management* (Helsinki, Finland: Ministry of Agriculture and Forestry, 1996).
12. International Tropical Timber Organization, *Criteria for the Measurement of Sustainable Tropical Forest Management* (Yokohama: ITTO Policy Development Series, paper no. 3, 1992).
13. J. Sawyer, *Tropical Forests* (Geneva, Switzerland: World Wildlife Federation, 1990).
14. C.S. Holling and G.K. Meffe, "Command and Control and the Pathology of Natural Resource Management," *Conservation Biology* 10 (1996), pp. 328-337.
15. J.A. Sayer, J.K. Vanclay, and N. Byron, "Technologies for Sustainable Forest Management: Challenges for the 21st Century," *Commonwealth Forestry Review* 76 (1997), pp. 162-170.