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Pursuit of Sustainable Forest Policy in the Americas
Current Initiatives and Opportunities
for Regional Cooperation

by

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Environment Unit

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CONTENTS

| | |
|--|-----------|
| Acknowledgments | iv |
| Abbreviations and Acronyms | iv |
| Abstract | v |
| Introduction | 1 |
| 1. Forests and Communities | 2 |
| 2. Information and Planning Requirements for Sustainable Forest Use | 3 |
| Forest Resources in the Americas | 3 |
| Forest Loss..... | 4 |
| Managing Forest Resources..... | 5 |
| Sharing Forest Resources | 6 |
| A Commitment to Participation and Information Sharing..... | 6 |
| Participatory Planning for Sustainable Forests..... | 7 |
| Sharing Information on Sustainable Forest Management | 9 |
| 3. Forest Sector Issues in Sustainable Forest Management | 10 |
| Timber Concessions..... | 11 |
| Forest Charges..... | 11 |
| Government Regulation of Private Forests | 12 |
| Forest Industry and Export Policies..... | 13 |
| Trade Initiatives | 13 |
| The Valuation of Forest Resources | 14 |
| 4. Cross-Sectoral Issues in Sustainable Forest Management | 16 |
| Agricultural Policies..... | 16 |
| Land Tenure, Property Rights, and Colonization Policies..... | 16 |
| Macroeconomic Policies | 17 |
| Trade and Investment Policies | 18 |
| Energy Policies..... | 18 |
| Evaluation of Tenure Policies and Property Rights for Forest Resources | 19 |
| 5. The Policy Challenge | 20 |
| Bibliography | 21 |
| Boxes | |
| 2-1 Timber Consumption in the Americas | 4 |
| 2-2 Plantation Forestry in Latin America | 5 |
| 3-1 Community Forest Management..... | 12 |
| 4-1 Building Roads | 17 |

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Abbreviations and Acronyms

| | |
|-------|--|
| FSC | Forest Stewardship Council |
| IPF | Intergovernmental Panel on Forests |
| ITTA | International Tropical Timber Agreement |
| ITTO | International Tropical Timber Organization |
| NGO | Nongovernmental Organization |
| TFAP | Tropical Forestry Action Plan |
| UNCED | United Nations Conference on Sustainable Development |
| WRI | World Resources Institute |

Introduction

Sustainable forest management is widely recognized as fundamental to sustainable development; it is also among the most difficult challenges the world faces in the transition to sustainable development. Tropical forests are shrinking rapidly in Latin America and the Caribbean. Although temperate forests have remained stable in area, they are increasingly threatened by pollution, and old-growth stands are being converted into less diverse tree farms. While states have sovereign rights to exploit resources for economic growth and for the well-being of their citizens, forests provide public goods to neighboring countries (through shared watersheds) and to the world at large. Collective action is thus required for sustainable forest management.

Since the United Nations Conference on Sustainable Development (UNCED) in 1992, the countries of the Americas and other countries around the world have joined together in forums, initiatives, treaties, and accords designed to enhance the sustainability of forest resources. The 1994 Summit of the Americas in Miami called for partnerships throughout the Americas to enhance the establishment of democracy and free trade, to eliminate poverty and discrimination, and to guarantee sustainable development and the conservation of our natural environment for future generations. The suggestions for cooperation discussed below seek to build on the commitments of the Miami Summit within the context of other major forest initiatives and agreements in which the countries of the Americas are already involved.

Several legally binding conventions and nonbinding documents that affect forest management resulted from the UNCED conference. The Convention on Biological Diversity and the Framework Convention on Climate Change recognize the role of forests in the maintenance of global ecosystems. While a forest Convention did not emerge from UNCED, fifteen nonbinding "Forest Principles" were adopted and agreed to by all countries of the Americas. Agenda 21 and the Rio Declaration also called for sustainable forest management.

Since UNCED, countries of the Americas have entered into several new or renegotiated treaties or conventions. The legally binding International Tropical Timber Agreement was renegotiated in 1994 and includes a nonbinding promise that forest products should come from sustainably managed forests by the year 2000. The Central American nations adopted the Regional Convention for the Conservation of Natural Forest Ecosystems and the Development of Forestry Plantations during the 1993 Central America Presidents Summit (participating countries included Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panamá). Latin American countries are also involved in agreements establishing criteria and indicators for sustainable forest management. In 1995, the Tarapoto Proposal of the Amazon Treaty Organization (Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname, and Venezuela) identified criteria and indicators to measure Amazon forest sustainability and the Santiago Agreement of the Montreal Process established their Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests (this agreement included from the Americas: Argentina, Canada, Chile, México, the United States, and Uruguay).

This paper provides an overview of forest resources, forest policy, and opportunities for improvements in the Americas. Specifically it examines:

- The extent of forest resources in the Americas, and benefits that forests provide to local, regional, national, and global communities.
- The supply and demand for forest resources and the information and planning requirements for sustainable forest use.
- Forest sector policies key to sustainable management.
- Cross-sectoral policies key to sustainable forest management.
- Current regional and international initiatives to improve the sustainability of forest management practices, and further opportunities for regional cooperation.

1. Forests and Communities

Forests offer a variety of benefits that support local human communities, regions, nations, and life on earth generally. The benefits that forests offer are complex—some are private, others are purely public benefits, and many are on a spectrum in between those extremes. For example:

- *Private Goods:* Timber, fuelwood, ethnobotanically useful plants, meat from wildlife, and commercially marketed forest products are among the private goods for communities and for commerce.¹
- *Public Goods:* Forests serve global ecological functions in the cycling of water, carbon, oxygen, and nitrogen, they slow global warming by storing carbon, and serve as reserves of biodiversity. Regionally, forests function as watersheds, stabilizing hydrological systems, holding the soil, and reducing the severity of flooding.
- *Mixed Public and Private:* National parks offer leisure and educational activities, and they attract tourists, providing both public and private benefits at the local and international level.

States have sovereign rights to manage their forest resources for the well-being of their citizens. Forests, sustainably managed, can offer nations the basis for economic development and integration into world markets. Yet the global benefits that forests offer demand international action. In the first of the Forest Principles that came out of UNCED, nations agreed that they "have the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction."

Countries throughout the Americas use their forest resources differently. For example, in Latin America most timber is destined for use as fuel and charcoal. Timber in North America, on the other hand, is destined for industry rather than fuel. Local communities in the Pacific Northwest rely on the timber industry for Jobs and a way of Life; they may struggle against environmental interest groups concerned for biological diversity and

¹ Northern forests yield the bark of the Pacific yew, wild edible mushrooms, and maple sugar; tropical forest yield rubber, Brazil nuts, and cashews. See Plotkin and Femolare (1992) on commercial tropical forest products.

recreational interests. Indigenous communities in the Amazon rely directly on the forests for livelihood, and may struggle to protect themselves against commercial interests.

The ownership of forest resources also varies across countries. Almost two-thirds of forest resources in the United States are owned by individuals or corporations, while in the tropics national governments claim ownership of most forest lands. Neither state nor private ownership is a panacea. Private owners may have marginal interest in the positive externalities their forests provide to communities—local, regional, and global. The managers of state-owned forests, however, often lack direct incentives to provide for the greatest public good (see sections 3 and 4).

2. Information and Planning Requirements for Sustainable Forest Use

Often forest resources are poorly managed because of inadequate information on best practices; also, planning efforts need to be updated in light of new definitions of Sustainable management. Lack of appropriate contacts can prevent information from flowing to those who may benefit from it. Regular communication and information sharing can help to improve forest management. Forest planning should be updated with the full participation of stakeholders.

Forest Resources in the Americas

The Americas hold only 13.5 percent of the world's population and only 30 percent of the Earth's land area, but 41 percent of the Earth's forested area is found within these borders.² Of the seven largest producers of roundwood in the world, the United States, Brazil, and Canada rank first, fourth, and seventh respectively. Total production of roundwood in the Americas is 32 percent of world production. Most of the timber produced in the Americas is consumed at home—in paper and lumber in the north and for fuel in the south (see Box 2-1). But the Americas are net exporters of timber—both from tropical and from temperate and boreal forests. In addition, the forests of the Americas are rich in biological wealth. According to data on distribution of higher plants, Latin America contains 85,000 species or 32 percent of the world's total³. North America contains an additional 17,000 species of higher plants.

² The information on forest resources in this section is taken primarily from the World Resources Institute (WRI) (1996) and the Food and Agriculture Organization of the United Nations (FAO) (1995). Barber, Johnson, and Hafild (1994), Dudley (1992) and personal communication with Nels Johnson in June 1996 were also contributing sources.

³ Data compiled by the World Conservation Monitoring Centre. Higher plants include ferns, cycads, conifers, and broad-leaved species.

Box 2-1. Timber Consumption in the Americas

The countries of the Americas are large consumers of timber. Timber and paper consumers in the United States have by far the highest wood fiber per capita ratio in the world. The United States produced 491 million cubic meters of roundwood in 1991-93, 200 million more than China, the world's second largest producer. The vast majority of it is turned into lumber, plywood, and paper to satisfy large and growing domestic demands. In 1990 the demand for these products in the United States was 31 cubic feet of raw wood per capita, an increase of 33 percent since 1970. Brazil produced 269 million cubic meters of roundwood in 1991-93, ranking fourth in the world and second in the Americas. Seventy-one percent of that went for fuelwood and charcoal to satisfy domestic energy needs. Net exports from Brazil were only 443,000 cubic meters. Overall in South America, two-thirds of timber production goes for fuelwood and charcoal; in Central America this portion is more than 99 percent in several countries.

— *Source:* Johnson and Ditz, 1996, p. 2-12;

World Resources Institute (WRI), 1996, Table 9.3.

Forest Loss

While overall forested area in the United States and Canada is relatively stable, deforestation rates in Latin America are among the highest in the world. Of the 15.4 million hectares of tropical deforestation worldwide in the 1981-90 period almost half of that—7.41 million hectares—was from Latin America and the Caribbean. Annual rates of deforestation for that period averaged 5 percent in Jamaica; 2.4 percent in Costa Rica, the Dominican Republic, and Paraguay; and 1.4 percent overall in México and Central America. Most deforested land in Latin America over this period was converted to agricultural or pasture land. The rich volcanic soils of mountainous countries in Central America and the Caribbean are washing away under agricultural production as are many Andean slopes in the south. Watersheds are increasingly threatened, and this also has reduced the availability of hydroelectric power. Plantations are now helping to satisfy demand for forest resources (see Box 2-2).

Temperate and boreal forests have also experienced degradation and unsustainable management practices. British Columbia came under intense criticism for exceptionally high rates of forest clearing during the 1980s—up to 30 percent higher than the sustained yield level. Now other provinces in Canada are struggling to keep up with the improved record of British Columbia. U.S. forests face increasing threats from air pollution, which also leaves trees vulnerable to pests and from biological impoverishment as diverse natural forests are converted to plantations.

Box 2-2. Plantation Forestry in Latin America

Forest plantations, although small in area, are making significant contributions to satisfy timber demand. In 1990 Brazil had 4.9 million hectares of timber plantations—less than 1 percent of their forested area—yet plantations grow quickly and are highly productive. In Latin America overall, industrial plantations account for one-third of industrial output although they cover less than 1 percent of forest lands. Chile and Argentina have plantations of 1 million and 0.5 million hectares respectively, and ranked first and second respectively among Latin American wood exporters in 1991-93. Plantations in Central America and the Caribbean are also growing rapidly—at annual rates of 16 percent and 11 percent respectively—although here too they represent less than 1 percent of forested land.

— Source: Postel and Ryan, 1991; WRI, 1996, Tables 9.2 and 9.3.

Managing Forest Resources

Demands on forest resources—for timber and pulp, fuel, watershed protection, recreation, and the livelihood needs of indigenous peoples—are outpacing the once abundant supply in many countries of the hemisphere. As forests are felled and degraded, biodiversity is lost. While temperate and boreal forests remove carbon from the atmosphere, deforestation in the tropics now releases enough carbon to outweigh that benefit⁴. Because of the public goods nature of forests, collective action and improved planning is required to ensure that the benefits forests provide are available to the next generation.

Many of the problems of forest management are particularly apparent in border areas and thus require inter-American cooperation. Illegal traffic in timber and forest products has become more critical in these zones. Many national governments offer only weak protection.

The maintenance of biodiversity requires forest protection as a cornerstone. Protected forests must be subject to only very limited human modification. They may be used for scientific research or recreation but not managed for commercial purposes. Worldwide there are 8,619 protected areas covering 792 million hectares; 2,419 of those areas are in the Americas and cover 378 million hectares or 48 percent of the world total⁵. At the practical level, however, it is difficult to determine how well these protected areas are functioning in many countries.

⁴ See Dixon and others (1994)

⁵ Nota all of these protected areas are forested not are they all protected to the same degree. See FAO (1995, Table 8). Five categories of protected areas have been established by the World Conservation Union (IUCN).

Forest inventory and monitoring is far from perfect in developed countries; obviously budgets vary dramatically between developed and developing countries. The United States operates under a 1987 inventory baseline and relies on monitoring and sampling to update it. Canada's base inventory is from 1986, but monitoring and sampling are not conducted. Surveys in Latin America are much less reliable and baseline data may date back to 1980 or even earlier. Efforts are being made to improve global coordination and comparability in forest assessment. The need for capacity building in forest resources assessment in developing countries has been widely recognized.

Sharing Forest Resources

As shown above, there are many demands on forest resources. Commercial interests profit from timber production. Farmers in watershed regions benefit significantly from sound hydrological systems and soil conservation, so too do the communities that depend on the electricity generated and the fuelwood the forests provide. Indigenous groups depend on the forests for food, shelter, and medicine. Increasingly the global community demands attention to biodiversity and carbon cycling. Elected or appointed government officials may represent some combination of these interests and nongovernmental organizations (NGOs) may represent others. As the forests shrink, the potential for conflict escalates.

The perspectives of indigenous peoples and women's groups have often been left out of the planning process. National planners can learn from indigenous groups that have successfully managed forest resources for millennia or centuries. Efforts like the World Bank's Pilot Program to Conserve the Brazilian Rain Forest have been launched to open the planning process to wider participation by stakeholders, including indigenous groups⁶. Community forestry efforts governing fuelwood collection can fail if the men who make the decisions do not consult with the women who gather the wood⁷.

A Commitment to Participation and Information Sharing

While data collection and management may be a highly technical activity, responsibility for forest resources planning should not rest solely with technicians. In addition, the information that technicians and others produce should be widely shared. The countries of the Americas have already expressed commitment to participatory planning and information sharing.

The first of the four principal areas of action proposed at the Miami Summit of the Americas is "Preserving and Strengthening the Community of Democracies of the Americas." A key component is the invigoration of society by Strengthening community participation on the grounds that "A strong and diverse civil society, organized in various ways and sectors, including individuals, the private sector, labor, political parties,

⁶ A quarterly newsletter is published on this project and may be obtained from the World Bank. Approximately 145,000 indigenous people live in the Amazon region of Brazil today (World Bank 1995)

⁷ See Sarin (1996)

academics, and other nongovernmental actors and organizations, gives depth and durability to democracy." Moreover, increased sharing of information was recognized to be essential to the promotion of prosperity in the hemisphere.

The UNCED documents—including Agenda 21 and the Rio Declaration—also reflect a strong commitment to increased community participation and information exchange. The Forest Principles particularly emphasize the need for wide participation from "interested parties, including local communities and indigenous people, industries, labor, nongovernmental organizations and individuals, forest dwellers and women, in the development, implementation and planning of national forest policies" (Principle 1.d) Further, Principle 12 (b and c) call for the enhancement and broadening of "international exchange of information on the results of forest and forest management research and development, making full use of education and training institutions." Additionally, Agenda 21 calls for the establishment of partnerships to promote the exchange of information and technical expertise and to enhance cooperation and financial commitment to sustainable development.

Participatory Planning for Sustainable Forests

The Intergovernmental Panel on Forests⁸ has concluded that, "[p]lanning is less about technical forestry alternatives than about how to lessen and accommodate competing sociopolitical claims on forests." Further, they stress that planning requires shared vision and extensive participation by stakeholders. They find that "virtually all observers of the subject believe that planning works best when it is participatory from beginning to end." Unfortunately, however, they find that the concept has yet to be fully operationalized.

Forest plans should be reconciled among stakeholders in light of the new definitions of sustainable forest management. In the last two years major strides have been made in the Americas towards agreement on what sustainable forest management means. Both the Tarapoto Proposal and the Montreal Process are efforts to redefine forest sustainability in measurable ways (for the Amazon, and the Temperate and Boreal Forests respectively). Concepts focused only on sustainable timber yield and watershed maintenance have been enhanced with new concerns for socioeconomic benefits for dependent communities, biodiversity, and carbon cycling. The Regional Convention of Central America also reflects this developing consensus on sustainable forest management.

Among the indicators of sustainability in both the Tarapoto and Montreal documents are measures of the forest area under various forms of management. In order to maintain a forest estate over the long term that satisfies the needs of local, regional, and global communities, explicit targets for a variety of management forms may be necessary. These various forms might include areas protected from human exploitation; areas managed—to a greater or lesser extent, by local communities or governments—for economic goods and services, timber and forest products, nature tourism, and genetic resources; and areas

⁸ Established by the Commission of Sustainable Development of the United Nations (IPF 1996b, P. 18)

more strongly oriented to timber production. Some countries might need to increase the forest estate, while others might plan to harvest forest resources and clear land for alternative sustainable development ends.

Sustainable forest planning exercises are at different stages throughout the hemisphere. Tropical Forestry Action Plans (TFAPs) first launched in 1985 with the objective of controlling tropical deforestation while still meeting local and national needs for forest resources, have been criticized for focusing too narrowly on increasing investment in the forestry sector without fundamentally addressing the issues of sustainability. But in many countries, since the TFAP revision in 1991, the TFAP has become a framework for strategic planning in forestry. The Central American Regional Convention proposed "the adoption of the National Tropical Forestry Action Plans, as mechanisms to reach the objectives of [the] Convention" (Article 6.b).

The Intergovernmental Panel on Forests (IPF) of the Commission on Sustainable Development summarizes progress on national forestry programs in Latin America and the Caribbean: Of a total of thirty-four countries, twelve are now implementing (and an additional country is ready to implement) plans that have been formulated since UNCED⁹.⁹Six countries are revising plans that were formulated before UNCED and five are implementing plans that were formulated before UNCED. In two countries a planning process has not yet begun, in five the planning process is stalled, and three countries are involved in an initial planning process. Highly sophisticated forest plans, like those in the United States, have also failed to achieve the kind of public involvement called for in the Montreal Process and the Tarapoto Proposal. While information technically may be available to the public, it may be interpretable only by a limited number of experts.

Many plans have failed to adequately take into account land tenure policies and other cross-sectoral policies that may result in unintended deforestation. Long-term national plans for the forest estate should be developed or updated as necessary in light of the increased understanding of what sustainable forest management means. These plans should take into account concerns for the maintenance of socioeconomic benefits for dependent communities, soil and water conservation, recreation, biodiversity, and carbon cycling as well as sustained timber yield. Current policies—both within and without the forest sector—which result in unintended deforestation should be reexamined and modified. Forest sector plans should also be mainstreamed into overall national plans.

The national processes to develop or update these national plans for forest resources and the forest estate should involve governmental and nongovernmental organizations as well as academics, community organizations, women's and youth groups, labor organizations, the private sector, forest dwellers, and indigenous organizations. Information regarding the forest sector planning process should be made publicly available in a format that can be widely interpreted. Forest sector plans should also be shared with other countries in the hemisphere.

⁹ See IPF (1996), "Progress in national forest and land-use plans". Prepared for the second session of the Intergovernmental Panel on Forest, Geneva Switzerland, March 1996. Doc No. E/C.17/IPF/1996/8

Public participation should be invited at an early stage in the planning process and encouraged throughout.

Sharing Information on Sustainable Forest Management

Maximizing the contribution of the region's forests to Sustainable development in the Americas, while preserving the resource base for future generations, will require bringing together a wide variety of concerned parties to work toward that end in partnership. Regular dialogue among countries of the Americas is to be encouraged to maintain constructive discussions on sustainable forest management issues; increase information sharing in technical expertise, research, and methods of sustainable forest management; promote education and awareness; help build shared understandings where controversy exists; and provide opportunities for regional cooperation and innovative partnerships.

Existing fora such as the Food and Agriculture Organization's Forest Commission for Latin America and the Caribbean, and the Central American Commission on Forestry and Protected Areas, could be expanded and coordinated to achieve these information sharing goals. Participants should represent a cross section of those concerned with sustainable forest management in the hemisphere, including:

- Public and private managers responsible for forest resources from local, regional, national, and international levels
- Public sector officials
- Private sector forest interests and managers
- Educators and academics
- Representatives of local communities, indigenous groups, and forest dwellers
- NGOs
- International organization with financial and technical resources

Topics for discussion might include analyses and case studies of some of the following issues:

- The sustainable management of forests on international borders.
- Forest resource policies regarding concessions and pricing, forest industry and export policies, and regulatory frameworks that govern forest management.
- Forest tenure policies and requirements for securing sustainable forest management under various forms of tenure.
- Cross-sectoral policies that affect the sustainability of forests such as infrastructure and colonization policies, population policies, agricultural and energy policies, trade and investment strategies, and macroeconomic policies.
- Commercial opportunities that support sustainable forest management including trade and investment.
- Opportunities for cooperation in the development, dissemination, and application of appropriate technologies for sustainable forest management within the Americas.
- Opportunities for cooperation in human resource development, research, and innovative national and international financial mechanisms for effective forest conservation and management.

Opportunities for further networking of forest policy participants could also be pursued. Existing forest networks—such as the Red de Cooperación Técnica en Sistemas Agroforestales of the Food and Agriculture Organization, Latin America Regional Office, and established academic, nonprofit, and public sector networks in the hemisphere—might be linked to country focal points, university and research networks, and key agencies and institutions.

Full use should be made of the Internet to post information on list serves and provide access to information through Worldwide Web pages. Postings on list serves might include: requests for technical assistance, information and advice from knowledgeable sources, announcements of educational or internship Opportunities, announcements for conferences and calls for papers, and discussions of significant forest issues.

Such networking would catalyze partnerships and projects between complementary stakeholders— linking technical expertise, funding, and other voluntary cooperation with Opportunities for improved forest management. Mechanisms should be established to insure that countries and stakeholders are not excluded from benefits of the Network due to lack of access to Communications technology.

3. Forest Sector Issues in Sustainable Forest Management

Forests are threatened by policies and conditions both within and outside the forest sector; and both direct and underlying causes of deforestation can be observed. Direct causes of deforestation and degradation in the Americas can be thought of in terms of three categories:

- *Land Use Conversion.* For agriculture and livestock, mining and dams, urban development, roads, and other infrastructure.
- *Overexploitation.* For timber, fuelwood, and nonwood forest products.
- *Environmental factors.* Both natural and anthropogenic, including extreme weather conditions such as hurricanes, droughts and fires, floods and landslides, and pollution and pests (IPF 1996a).

But the underlying causes that result in these direct causes are complex and interlinked. They may be related to policy failures both within and outside the forest sector, problems of land tenure conditions, demographic factors, and economic conditions and incentives.

The replacement of forests by alternative uses is not always detrimental—deforestation may carry an unnecessarily negative connotation. Deforestation to replace the forest with agricultural uses may be a wise use of the land. Similarly, forests can be "modified" without being "degraded" (IPF 1996a). Forest modification can result in recovery or enhancement of forest resources, and converting land into plantation forests may either be beneficial if timber production is a priority or detrimental if it unnecessarily threatens biodiversity.

This section examines issues within the forest sector that affect the sustainability of forest management¹⁰ and the following section looks at issues outside the forest sector that often are just as responsible for unanticipated loss of forest resources. In both sections suggestions are made for cooperative actions that might improve the sustainability of forest management in the region.

Timber Concessions

Many of the forests in the Americas are owned by the public sector and conceded or licensed for harvest to private loggers. The terms of timber concessions have substantial implications for sustainability.

The duration of the timber concessions may be a determining factor. Timber concessions of short duration and insecure tenure encourage exploitation for the short term or resource mining. Long-term sustainable management practices are discouraged because the concessionaire will not be around to recover the investment or return for a future harvest. To capture more than one cutting cycle, foresters recommend concessions of seventy-five years. Such concessions are rarely found, however. Most Canadian provinces grant forest management licenses of twenty years that are renewable subject to a performance review of management and renewal activities. Under adequate performance, tenure is almost perpetual. Critics complain of inadequate government oversight and enforcement.

In developing countries, timber concessions tend to be of much shorter duration. For example, research found that in Santa Cruz, Solivia, 90 percent of all contracts granted until 1992 were of three years or less; the concessions are also subject to invasion by peasants that are sometime granted land title by the government. In Belize, although some concessions may be as long as ten years, most are only one year in duration. While renewal is possible, it is quite uncertain and "fraught with bureaucratic problems." The result is very poor incentives for long-term sustainable management.

Forest Charges

Concessions should be granted in a competitive process to the highest bidder. Theoretically this ensures that the concessionaire selected is the most efficient producer and that the government is not selling off the nation's forests too cheaply. All too often forest revenues, including stumpage fees, land rents, royalties, and taxes are very low, encouraging rapid, wasteful exploitation of forests. Potential revenue that could be reinvested in providing the public goods that forests offer is lost. Furthermore, low fees on public forest land may depress prices for private foresters, reducing long-term investment returns in forestry.

¹⁰ The section relies heavily on Johnston and Lorraine (1994 a). Other sources include Repetto and Gillis (1988), Barber, Johnson, and Hafil (1994), Browder (1987), Grayson (1995), Gregerson (1989), Grut and others (1991), Kishor and Constantino (1996), Sizer and Rice (1995), contributors to Cortés – Salas and others, eds. (1994), and personal communication with Nels Johnson.

When forest charges are based on timber volume removed rather than on the volume of merchantable timber in the concession, concessionaires are encouraged to "high-grade" by selecting only the best logs and leaving the others undamaged. Royalties based on the value of logs and differentiated by species can help to improve management practices, but are administratively deficit. Higher fees, when they are undifferentiated, can increase high-grading.

In many regions throughout the Americas forests are being sold cheaply to loggers. Advocates for reform of the U.S. Forest Service complain of below-cost timber sales on public lands. In Belize, royalties (somewhat differentiated by species and quality) are reported to be far below world market values with insufficient enforcement of payments. Suriname is also attracting Asian timber companies with low royalties and limited tax collection capacity. Low forest charges are also reported in Costa Rica, Ecuador, and Bolivia.

Government Regulation of Private Forests

Governments of the Americas also regulate private forest lands. In Costa Rica, for example, the forestry department treats timber located on private land the same as timber located on public land. Landowners wishing to cut timber must apply for a license, prepare management plans (possibly including a forest inventory), pay reforestation deposits, obtain transport permits, pay taxes and fees, and comply with minimum diameter requirements, just as concessionaires on public lands must do. Yet compliance is very low and much unauthorized timber is cut. A similar situation is found in Guatemala.

Two-thirds of the forest land in the United States is privately owned. Although forest management is regulated at the state and federal level, landowner responsibilities are primarily directed toward reforestation. Private forests have generally been converted to young, even-aged stands of only one or two species. Private communities also manage forests—sometimes on government lands and sometimes under community ownership (see Box 3-1).

Box 3-1. Community Forest Management

Community forest management, whether by indigenous groups or other local communities, can increase the sustainability of forest management over public sector control. Indigenous groups have sustainably lived off forest resources for millennia and are increasingly interested in legally establishing their rights to forest lands. Governments have also turned to community forest management projects to improve management by turning it over to local stakeholders, while still maintaining ownership. Guatemalan families can earn three times as much gathering nontimber forest products than they can by clearing the land for agriculture or cattle. Nature and archaeological tourism provide further benefits. These local communities thus have incentives to preserve the forest that surpass those of government officials.

Forest Industry and Export Policies

Governments impose log export bans in rare cases to alleviate deforestation; typically the rationale is to encourage value-added in industrialized wood products, employment, and economic growth. Log export bans in Latin America date back to the protectionist industrialization policies of the 1950s. Tariff and nontariff barriers have also been applied to keep out processed forest products. Export subsidies may be used to encourage domestic industrialized wood products. Usually such measures are detrimental to sustainable forest management.

Log export bans depress the domestic price of logs. While this may encourage the log-processing industry, typically the excessive protection encourages inefficient industry. Meanwhile, the low price of logs is a major disincentive to invest in sustainable timber practices, and results in a conversion of forestry land to other uses such as agriculture or cattle. Researchers found that log export bans in Bolivia have resulted in such wasteful industrialization practices that had the logs been exported directly they would have been more valuable than the sawnwood produced. Similarly, in Costa Rica researchers have found that besides creating inefficient industry and low returns to sustainable forest management, the lower price of logs has also resulted in much lower revenue to the forest sector.

Trade Initiatives

Several interactional initiatives are currently underway concerning trade in sustainable forest products, but disagreements are strong¹¹. The International Tropical Timber Agreement (ITTA)—renegotiated in 1994 in the framework of the UN Conference on Trade and Development—is a binding imitational commodities agreement between consumers and producers of tropical timber. The fifty-two members represent about 90 percent of world trade in tropical timber. In 1991 the International Tropical Timber Organization (ITTO), which implements the ITTA, adopted a set of criteria for the measurement of sustainable forest management. The previous year in Bali member states adopted Target 2000, a nonbinding agreement that by the year 2000 all trade in tropical timber would be from sustainably managed forests. However, efforts by developing countries to extend the ITTA worldwide so that it also applied to sustainable management of temperate and boreal forests were thwarted by developed countries.

Another binding international treaty, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), regulates trade in endangered species and has been applicable to forest products, including timber, since the early 1990s. Contention resulted in 1994 when some groups attempted to list big-leaf American mahogany (a valuable timber export of Brazil) as an endangered species.

The Forest Stewardship Council (FSC) is a well-known NGO trade initiative. The FSC is

¹¹ See Grayson (1994) on official international trade initiatives, and see Cabarle and others (1995) and FSC (1994 a, 1994 b) on NGO initiatives.

an independent nonprofit established in 1993 by representatives of NGOs, scientists, industry representatives, indigenous peoples, and forest product certification organizations. It seeks to encourage the economic viability of environmentally and socially responsible forest management by offering consumers more complete information. The FSC specifically evaluates and accredits independent agencies that certify forest products. The Principles and Criteria of the FSC are intended to apply to temperate and boreal forests as well as to tropical forests.

Nevertheless, the practice of ecolabeling or timber certification in the Americas has attracted attention as a barrier to trade. Unfortunately, excessive attention has been focused on tropical forest products and timber, which has led to import bans on tropical timber. Latin American countries have thus argued that certification can be seen as a nontariff trade barrier. In fact, the recently negotiated Tarapoto Proposal of the Amazon Treaty Organization called for reductions in trade barriers including "discriminatory criteria such as the imposition of environmental conditions on tropical timber imports, especially those of high aggregate value."

The Valuation of Forest Resources

In addition to trade initiatives, countries of the Americas can work together to properly value forest resources. Forests assets have frequently gone unaccounted for in national accounts and in other analyses. The depreciation of productive assets like buildings and machines is considered in the core national accounts, but depletion of timber and soils has been ignored. Their depletion is a form of disinvestment and reduces future economic potential. Similarly, losses in biodiversity and in the production potential of other forest products represent economic losses, as does the loss of the human capital stocks of knowledge of indigenous groups.

Internationally, efforts have been made in recent years toward "greener" national accounting systems. The latest revision to the standard UN system of national accounts includes a Handbook of Integrated Environmental and Economic Accounting released in late 1993. The handbook provides guidelines for the construction of "satellite accounts" that are kept separate from core economic accounts but are entirely compatible with them. Instruction is given for the treatment of natural capital depletion (especially minerals and timber) and the costs of degradation (of water and air) and changes in land use. For goods or services that have no market prices, alternative valuation methods are suggested to impute the cost of depletion, degradation, or land use change. The information thus gathered allows for improved cost-benefit analyses of alternative opportunities for forest lands.

The maintenance of the satellite environmental accounts is optional at this point but many international organizations, such as the European Community, the International Monetary Fund, the Organization for Economic Cooperation and Development, and the World Bank have strongly endorsed the concept.

Many Governments of the Americas have since taken steps toward the establishment of satellite environmental accounts in the context of the UN Guidelines. A seminar on Natural Resource and Environmental Accounts for Development Policy, sponsored in early 1993 in Washington, D.C. by the Organization of American States in cooperation with the World Resources Institute, brought together representatives from public institutions all over Latin America. A committee was established to maintain an information network for countries in the hemisphere working on environmental accounting. A subsequent meeting has also been held. The Central American Regional Convention also endorsed incorporating the depreciation of forest resources and soils into the national accounting systems of signature countries.

It should be remembered that many of the benefits that forests offer to private individuals, communities, nations, and the world at large are extremely difficult, expensive, or impossible to value. It is certainly possible to value the depletion of the private goods that forests offer, such as timber and other specific forest products. The depletion of soils can also be valued in terms of, for example, the replacement cost of fertilizer. Attempts are also being made to assess the watershed value of forest resources. But the value of the biodiversity or the value as a store of carbon cannot yet be determined. At best an economic valuation of forest resources can be only partial or highly speculative. Nevertheless, systems should be constructed to account for those resources which can be valued.

Outside the national accounts, various other sectoral and microeconomic analyses—including cost-benefit analysis and input-output analysis—are appropriate and their use can be enhanced by improved training within countries in valuation methodologies for forest resources. This is particularly important in the case of large forest concessions, which may yield significant environmental costs. Applying valuation methods at the project level may approximate cost-benefit analysis to incorporate the full net benefits (including those that fall under market failures) of concessions, thereby indicating among other things possible unfair trade practices.

Increased emphasis should be put on the use of valuation techniques for the environmental and resource benefits that forests provide and increased training and capacity building within and between countries. This includes the recognition of forest resources as a key sector in an initiative to develop environmental satellite accounts according to the UN guidelines. It also includes incorporating valuation methodologies into sectoral analyses, cost-benefit analyses, and other microeconomic studies.

Exchange of information between American states should be facilitated for the development of common technical concepts, definitions, and quantitative indicators. Linkages should be established to promote the flow of financial and technical assistance from development agencies to forest resource valuation activities.

Within countries, collaborative mechanisms should be established between national agencies that handle national accounts and those that manage forest resource

information. In addition, common methodologies to value large forest concession should be sought and information should be widely disseminated. Internationally, information flows should be established both at the level of national accounts and at the forest data and valuation level.

4. Cross-Sectoral Issues in Sustainable Forest Management

Forest-sector policies may be overshadowed in influence by cross-sectoral policies that affect sustainable forest management. Deforestation is usually caused by a combination of many factors—both internal and external to the forestry sector and often involving forest tenure practices¹².

Agricultural Policies

Agriculture and livestock are a primary competing use for forest land. Policies to stimulate agriculture or livestock can have important implications for the forest sector. Along the east coast of the United States many lands once cleared for agriculture have returned to forests as conditions in the agricultural economy have changed. Most of the deforestation that occurred in Latin America during 1981-90 resulted from conversion to agriculture and pasture.

Case studies of Costa Rica, Ecuador, and Bolivia have found that a combination of policies has made agricultural activities more profitable than forest management. For example, while governments have invested in little research and extension in the forest sector, agricultural activities have received strong subsidies in the area. Similarly, agriculture has been stimulated with credit and other input subsidies, price supports, and export subsidies. Investments in infrastructure—such as roads, silos, warehouses, and processing facilities—have also been biased toward agriculture.

Much of the deforestation in Latin America has been blamed on incentives for beef exports—the hamburger connection. In Costa Rica pastureland almost doubled between 1960 and 1984, while cropped area increased by less than 10 percent. Beef exports quadrupled between 1961 and 1980 spurred on by subsidized credit and high delinquency rates for the same credit. Incentives for livestock development have also been blamed for high rates of deforestation in the Brazilian Amazon in the 1970s and 1980s. Many studies showed that subsidized rural credit, favorable tax treatment for agriculture, and tax credits for investments in cattle ranching were contributing factors.

Land Tenure, Property Rights, and Colonization Policies

¹² The section relies heavily on Johnston and Lorraine (1994a). Other sources include FAO (1995), Myers (1981), Cruz and others (1992), Cruz and Repello (1992), Pearce and Warford (1993) Ledec (1995), Mahar (1989), Binswanger (1991), Lutz and Daly (1990), Mendelsohn (1994), Bromley (1989), Lynch and Talbott (1995), Repello and Gillis (1988), Barber, Johnson, and Hafild (1994), Browder (1987), Grayson (1995), Gregerson (1989), Grut and others (1991), Kishor and Constantino (1996), Sizer and Rice (1995), While and Runge (1994), Schneider (1994), WRI (1996), contributors to Cortés-Salas and others, eds. (1994), and personal communication with Neis Johnson.

Land tenure policies and rights to forest resources are among the most complex factors which affect sustainable forest management. Many economists stress the importance of secure property rights to encourage prudent management of natural resources. Others find that privatizing forest lands may be less sustainable than forests communally managed by indigenous groups. A study of watershed management in Haiti similarly finds that insecure tenure does not necessarily inhibit cooperative behavior.

Land tenure practices in combination with the economics of the frontier are an important cause of deforestation in the Americas. Recent evidence also indicates that severing the "hamburger connection" and removing subsidies for cattle and agriculture have not alleviated deforestation in Central America and the Brazilian Amazon. While beef exports may have been a causal factor in pasture expansion in the 1960s and 1970s in Central America, current pasture expansion is more related to a desire to obtain access to new lands and protect those lands from encroachment and expropriation, and to the construction of new roads according to some researchers (see Box 4-1). The forest frontier involves peculiar land tenure characteristics. Rights to land are insecure and land is also very cheap. This makes "nutrient mining" and land and forest degradation a rational response; it is cheaper to move on than to invest in the land. Colonization or squatter laws which reward this behavior by granting rights to "improved" (cleared) land and offering free land surveys and titling exacerbate the situation.

Macroeconomic Policies

Macroeconomic policies in Latin America, combined with land tenure and colonization practices, have created a recipe for forest conversion. Inflationary policies in Brazil have worked in tandem with land tenure policies on the frontier to encourage speculation in land. The excessively high rates of inflation which were the norm for Latin America in the 1980s made land a relatively safe alternative. In order to protect those lands from invasion, they must be cleared of forests. Fiscal policies also encourage the purchase of land to misdeclare income as being from agriculture and thereby shelter it from taxes. Inflationary policies also contribute to high real interest rates when investors take their money out of the country. Interest rates are key to future financial returns in sustainable forest management—high interest rates encourage immediate logging so that profits can be invested. Returns in the future are worth much less when interest rates are high.

Box 4-1. Building Roads

Building roads and other infrastructure further encourages colonization. Brazil has attracted considerable attention with their efforts to open the Amazon to development by building roads. Road building was an important component of the Brazilian National Integration Policy, established in 1970. The trans-Amazonia highway resulted in minimal forest losses because the area opened was poorly suited for agriculture; on the other hand the Cuiabá Porto Velho highway running north to south (rather than east to west) introduced uncontrolled settlement to the Rondonia area. Currently road building in Central America is found to be a larger stimulus in the conversion of forests to pastures than are subsidies to agricultural and cattle sectors. Road building in Bolivia and Ecuador, combined with other colonization and land tenure policies, may lead to the conversion of millions of hectares of tropical forest, according to researchers.

— *Source:* Mahar 1989; Pearce and Warford 1993; Cortes-Salas and others 1994.

Structural adjustment policies have been blamed for the harvest of forests to generate foreign exchange. But the primary negative effects on forests of structural adjustment programs may be through the (temporary) increase in poverty and the resultant increased pressure to invade forest lands. Just as often the effect of structural adjustment policies on forests may be mixed or positive when inappropriate policies are removed and economic performance improves.

Trade and Investment Policies

Aggressive policies to encourage trade and attract investment (sometimes part of structural adjustment) can have mixed or negative effects on forest resources. In general free trade and investment are good for economic growth. But growth may not alleviate poverty, and environmentalists have questioned whether economic growth is good for the environment. Growth accompanied by poverty alleviation can certainly diminish pressure on forest resources. But forest resources have many positive externalities for local, regional, and global communities, and property rights to forest resources are not completely specified, thus liberalizing trade can lead to excessive timber harvests. More aggressive policies to encourage exports and subsidize investors can be particularly damaging.

For example, the rapid movement of Asian investors into logging concessions in Suriname is causing concern. Eighty percent of the land area of Suriname is still covered with primary tropical forests and another 10 percent is also forested. Clearly, Suriname should consider channeling forest resources into other forms of capital that could work in a sustainable economic system. Nevertheless, distortions in global logging markets, such as log export bans and incentives for timber processing in Malaysia and Indonesia can create incentives for excessive logging in Suriname to meet the demand for raw logs in Asia. Suriname is also well positioned among regional and international trade accords such as the Caribbean Community and the Lomé Treaty, which offers preferential access for exports to the European Union. Negotiators are also moving towards a free trade zone in the Americas. Such market access is quite attractive to international investors.

Energy Policies

Energy policies can have a major effect on the demand for timber. While only 4 percent of roundwood production in Canada is used for fuel and charcoal, in the United States this proportion is close to 20 percent. As noted above, most forest production in Latin America is for fuel—fully two-thirds in South America and 99 percent in many countries of Central America.

Energy policies must be reconciled with the ability of forests to supply fuelwood. In Central America about 80 percent of energy consumption comes from fuelwood, and forests are rapidly disappearing. The conversion of fuelwood to energy is an inefficient process. Moreover, many urban consumers of fuelwood would prefer alternative fuel sources, such as the gas stove, but are constrained by the up-front cost. A number of options should be

considered. Certainly greater investment in multiple-use forest plantations is one option. Technological improvements to use fuelwood more efficiently are also possible. Generally, the use of fossil fuels should not be subsidized, but greater public investment in renewable energy sources is appropriate.

Evaluation of Tenure Policies and Property Rights for Forest Resources

Tenure policies for forest lands and resources determine the incentives that affect forest management. The effects of the cross-sectoral issues discussed above—including agricultural policies, macroeconomic policies, and trade and investment policies—are often manifested with land tenure linkages. Throughout the Americas, unsustainable forest management practices are rooted in tenure policies designed without a thorough evaluation of their effect on forest management.

Recent initiatives in sustainable forest management recognize land tenure and property rights to be key elements. The Central American Regional Convention recognizes land tenure policies to be among the most serious threats to forests in the region. Concentration of land and unequal access to prime land is highlighted as are settlement policies in forest lands. The Santiago Agreement of the Montreal Process, with respect to temperate and boreal forests, also calls for a legal framework which "clarifies property rights, provides for appropriate land tenure arrangements, recognizes customary and traditional rights of indigenous people, and provides means of resolving property disputes by due process."

Systems of land tenure and property rights over forest resources vary substantially throughout the Americas. Most of the forest resources in the United States are owned privately but regulated by government to capture public benefits. Forest resources in Canada are owned by the Crown, under the responsibility of the provinces, and management responsibilities are delegated to concessionaires. Most forest resources in Latin America are publicly owned. Indigenous groups throughout the Americas also claim rights to forest lands—the recognition of these rights by governments and immigrants to forested areas varies widely.

The lack of clear property rights can diminish incentives to sustainably manage forests for the long term, but there is no property regime which offers a perfect solution. The state as owner of forest lands often fails to take into account the needs of many stakeholders. Under secure private property rights, incentives are provided to maximize an income stream over a reasonable planning horizon, but other public benefits normally will not be considered. Ownership and/or management by the local community is often an improvement over state management, but local communities also fail to take into consideration the national and global benefits that forests offer. In every case steps must be taken so that forests are managed sustainably.

The various forms of forest tenure and property rights that affect sustainable forest management should be identified. In light of the significant public benefits that forests

provide to local, national, regional, and global communities, assessment of whether changes in land tenure or property rights are necessary should be undertaken. Determination of what additional steps may be required to secure sustainable forest management under the various forms of tenure are also appropriate.

5. The Policy Challenge

The challenge of achieving sustainable forest management in the Americas requires many changes:

- Better assessments of the state of forest resources and their abilities to satisfy demands for timber, fuelwood, other forest products, tourism, watershed maintenance, biodiversity, and carbon sequestration, and to respond to community needs at the local, regional, national, and global levels.
- Forest sector policies designed to provide for these various ends.
- Policies in other sectors that recognize the implications for forests.

Governments are made up of a wide variety of actors and interests, therefore collective action is a major challenge. Even when access to technology, information resources, and planning capacity are good, special interests greatly influence forest management.

The political process often responds to short-term rather than long-term needs. Furthermore, social benefits which cannot be measured and valued monetarily are neglected in the decision making process. Finally, social and political systems are quite resistant to change. To solve these problems, public education and continuing information about the public choices for sustainable forest policies are necessary. The political process should be opened up so that all stakeholders are better represented in political decisions—not only those few who have large financial interests at stake, but also the many who have small interests.

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