

FOREST RESOURCE POLICY IN LATIN AMERICA

Edited by Kari Keipi

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¹ The following texts of Background and Synopsis for the Papers Selected have been excerpted from this chapter of the book.

Background

Perhaps only the world's oceans can rival forests in their importance as a life-supporting mechanism for the planet. On a global scale, forests play a vital role in sustaining the biodiversity of natural ecosystems and in regulating the world's climate system. Latin America has one of the largest and most diverse remaining forest areas on Earth and, as such, is a region of contrasts and paradoxes. On the one hand, there are abundant natural resources including forests, rich mineral deposits, and bountiful inland water and coastal resources. On the other hand, the same natural resources that form the basis for the region's wealth are being rapidly destroyed, thus contributing to the persistently high levels of poverty in rural areas.

The preoccupation with forest resource degradation in Latin America has led to a number of initiatives that have intensified the action in the forestry sector. Latin America's rapid forest deterioration is having important economic and environmental consequences: in a period when the region is focusing on social development, resource degradation is leading to increasing rural poverty. If the forests of Latin America are to be managed sustainably and areas of particular environmental value conserved, policy changes at the national and international level have to take place.

Close scrutiny of the causes of forest degradation and deforestation in the region appears to point to policy failure as one of the main culprits. Policies affecting forests have failed for several reasons, one of which is the relative overvaluation of other competing land use options. The drive for short term political gains has frequently caused this overvaluation, placing forests at a disadvantage. In addition, most countries have not taken advantage of the benefits of the public good aspects of forest resources. The other main reason for poor forest practices has been the inadequate participation of affected groups in decision making and the poorly analyzed effects of forest and non-forest policies on the resource. The operational weaknesses of public institutions have also contributed to policy failure. In addition, recent privatization and trade liberalization efforts may have resulted in the unsustainable forest development of the region.

One of the principal objectives of *Forest Resource Policy in Latin America* is to provide ideas and provoke discussions on how to change policies and stimulate more effective management and investments in Latin American forests.

The State of Latin American Forests Today

The forests of Latin America and the Caribbean (LAC) have global importance due to their size: one fourth of the world's total forests and a half of all tropical forests lie in the region. The LAC has the highest number of trees, shrubs and higher plants in the world — about 85,000 species — which corresponds to some 31% of world total of 270,000 species. It is estimated that approximately 20% of forest habitats have already been lost in South America. In other parts of the region the loss has been even greater such is the case of Mexico which lost between 60 and 70 per cent of its forest habitats.

Most protected areas in Latin America and the Caribbean are located in forests. The region has a total of 230 million hectares of national protected areas; some 98 million hectares are in internationally established biosphere reserves and world heritage sites. These national protected areas correspond to 11% of the total land area of Latin America and the Caribbean. However, the effectiveness of their management could be improved.

Considerably more than a third of the total area of the region is classed as forest. The rate of its deforestation corresponds to the world average: some 7.7 million hectares or 0.8% of the forests disappear each year. Central America and Mexico have the highest rates of forest clearing with 1.6% of their remaining forests being destroyed annually. This rate is higher than that of continental Southeast Asia (1.5%) which has the world's second highest regional deforestation rate. It is worth noting that the reason Central America and Mexico have "high" rates and the Amazon area has "low" rates, is largely because the Amazon forests are so huge that even with major deforestation, it only represents a small percentage of the total remaining forest area.

Deforestation can be defined as the conversion of forest land to other uses. Conversion to agricultural use includes colonization and shifting cultivation by small farmers. When wealthy farmers convert forest land it is typically put into livestock production and is often related to land speculation. Yet another form of agricultural conversion is for large scale industrial plantations and clandestine drug cultivation, although these are lesser causes of deforestation. Further incursions are made by mining and infrastructure development in forest frontier areas, resulting in increased access to the forest and its conversion to agricultural use by colonists and land speculators.

Commercial logging and firewood collection are seldom a direct cause of deforestation in Latin America. However, if carried out over a long period of time or in an unsustainable fashion, they can result in a serious degradation of the resource. As in the case of infrastructure and mining projects, the actual logging impacts may not be severe, but they allow access to forest resources by colonists and land speculators. The result is gradual land fragmentation and uncontrolled development in these areas, especially when they do not form part of any overall regional or land use planning scheme.

Frequently, the various factors mentioned above, either on their own or in combination, form part of an interlinked, mutually reinforcing process of destruction of the LAC's forests and natural resources. This process is becoming increasingly uncontrollable, in large part due to the special circumstances of these mostly peripheral regions and to a lack of proper government administration. In this context, underlying structural conditions — such as unbalanced or unregulated land ownership, contradictory laws or tax incentive schemes — may have a detrimental effect on forests. The situation may be further exacerbated by shortcomings or abuses of power in the area of state planning, administration and control.

Although there is extensive deforestation throughout the region, there are ways to decrease it or counterbalance it. Deforestation can be countered either by protecting existing forests or by compensating for their loss through establishing new forests. The latter can be accomplished through promoting natural tree regeneration or through creating new plantation forests. Very little research

is available on the natural regeneration capability of different forest types in the region. However, natural regeneration would be an inexpensive way to reproduce trees, since both the seeds and seedling development would be a free product of the existing forest. Nevertheless, plantations are normally preferred in the region (even though they are more expensive to establish) because their wood and other products are usually much more valuable than most of the products extracted from natural forests.

Regional estimates of the area in plantation forests vary from 8 to 11.1 million hectares. Thus, the total planted area corresponds to approximately only 1% of the area of natural forests, or the deforestation rate of a single year in the region. While most of the fuelwood, non-wood products and environmental benefits come from natural forests, over half of the industrial timber is produced in plantations.

Plantations account for most of the economic potential of forests in many countries. Practically all of them have been established on abandoned or low-yield agricultural lands where erosion was prevalent. The overwhelming majority of plantations have been established with fast-growing exotic species in the *Eucalyptus* and *Pinus* genera, although research is also finding fast-growing native species that are increasingly used on plantations. Only in exceptional cases has prime agricultural soil, or land with existing natural forest, been used for tree plantations. This has been the case lately in Chile where industrial plantations are highly profitable and are encouraged by government incentives. Although the majority of existing plantations are industrial in nature, agroforestry and social forestry (in which communities grow trees for their own non-production needs, e.g., firewood) with local species are also widely practised in the region. These plantations are yielding important benefits to local communities and improving environmental conditions.

To date, investment in the sustainable development of forest resources in Latin America has been restricted to plantations and experimental projects in natural forest management. These projects require increased research and funding if they are to be of immediate benefit to the region's countries. Forest use decisions made by the present generation will have long term effects and they should not lead to a loss of welfare for future generations.

There are several measures that the region's governments could take to diminish deforestation. First, they could adopt policies and implement institutional and infrastructural supports that would make sustainable forest use financially competitive with alternative uses such as agriculture and ranching. Second, trade policies, export bans and the use of tariffs have kept many forestry operations from becoming competitive in international markets and should be revised. Third, forest concessions that have traditionally been doled out with relaxed standards for environmental impacts, replanting, and good management practices need to be redesigned. Finally, a lack of land tenure security has contributed significantly to a short-term, open-access approach to resource use and exploitation with serious negative impacts on sustainability.

Forest Potential and Peril

The LAC forests preserve essential economic, environmental, and ecological resources. They encompass opportunities for sustained timber and non-timber forest product extraction, fuelwood production, eco-tourism, bio-prospecting and other uses. With these products and commercial opportunities come the prospects for employment and income-generating activities to raise the standard of living for the poor in the region. The forests also provide regional and local environmental services in the form of water quality protection, erosion control to prevent soil loss, and hillside stabilization — services that, if not provided, would cost local and national governments substantial sums in mitigation and health care costs. In addition, national parks, reserves and undisturbed forests provide habitat for one of the most numerous and diverse assemblages of species in the world. A major portion of the world's flora, fauna and natural ecosystems exist only in the forests of Latin America and the Caribbean.

However, forest preservation, management and rehabilitation come at a cost. The opportunity cost for developing and safe-guarding these forest resources must come at the expense of other land uses. Frontier agriculture, ranching, colonization, and mining are relatively short-term, profit-seeking activities whose long-term damages to the land and society often do not appear justifiable. These activities are all too often destructive when they occur in an unregulated and haphazard manner.

Such deforestation does not always translate into the expected benefits of the new land use due to unsustainable production patterns. The conversion often results in a sacrifice not only of renewable economic resources such as timber and fuelwood, but it also includes the loss of such life-giving environmental amenities as watershed and soil protection, biodiversity, and carbon sequestration. There may be great disparities between the sustainable economic and environmental potentials of the region on the one hand, and the current economic yield and rate of resource degradation on the other. Sustainable or not, however, these activities produce income and employment for both the poor and the well-to-do. Thus, sustainable forest management practices must be competitive in the types of economic opportunities it provides in order to be an acceptable alternative to other land uses. The challenges, then, are two-fold: *first*, to develop and support sustainable, forest-based economic activities that are solvent and competitive with other land uses; and *second*, to eliminate the current biases against forest-based activities and in favor of other sectors, as well as incorporate the cost of negative consequences of unsustainable forest land uses into the operating budgets of those activities.

Forestry can be a very profitable business in Latin America. The increasing flows of international investments in the forestry sector of the region indicate this. In looking at the profit issue, the question of time horizon is of utmost importance in promoting sustainable forest management. The time frames for sustainable forest practices are often longer than for other types of investments and affect their relative profitability compared with other land uses. Yet the returns on this type of investment accrue much more broadly than solely to the private investor's pocket book. As explained above, the returns also accumulate in the form of ecological and environmental benefits to local, regional and global societies.

When forestry generates positive externalities, the investors may end up paying for benefits that accrue to a free-riding society. Thus, as it sometimes stands now, investors may face relatively low financial returns compared with other investments because of the longer investment periods, and have to maintain a certain degree of altruism as they watch a portion of those returns go to society. Therefore, even though LAC forests are a threatened and valuable resource, their wise use and conservation is not only a private sector priority. It should also be a priority for the area's governments to create an economic and financial climate that is favorable for private investment in forestry. In certain cases with very high externalities but marginal private profitability, government plans for compensating the providers of environmental services may be justified when considering the benefits they provide to society.

Investment Opportunities and Policy Adjustments

While there are many different types of investment strategies involving the public sector, the international community, and various public-private partnerships, *Forests Resource Policy in Latin America* focuses on ways to encourage private sector investment in the prudent utilization and conservation of forests. The roles of the public sector, non-governmental organizations (NGOs), and the international community are examined in this work mostly in the context of financing and policy development. The various types of private sector investment in forestry include natural forest management, plantation forestry, and extractive reserves for non-wood forest products and services.

Many environmental services are generated through traditional productive investments by the private sector. However, both governments and the private sector are involved in establishing protected areas where most of the benefits are purely environmental. Some of the forestry projects are more orthodox than others in terms of the existence of a market for their products and services and the accompanying institutional support.

One of the principal goals of this book is to analyze investment opportunities in sustainable forest operations in the LAC countries — whether it be plantation forestry or managing natural forests in a way that considers the long-term ecological impacts of the affected forest. In many industrial investments in Latin America and the Caribbean, forest products are treated as mineable commodities rather than as recyclable crops. This is not surprising when there are still, in some cases, incentives that favor eliminating trees and converting forest land to other uses. Forest mining often occurs not out of malevolence, but rather as a result of having few choices and lacking the many support structures needed to make longer term investments worthwhile. For example, many countries lack institutional support in the form of a functional public forest agency, or lack credible standards for harvesting. In order to take some of the guess-work out of investing, the government needs to provide the private sector with essential services such as forestry extension, consulting, and widely-available technical management guidelines in combination with enforceable, performance-based operating standards.

Policy support is an important mechanism for encouraging sustainable forestry investment. Specific forest-related policies such as trade liberalization, structural or monetary incentives, and land tenure

security can be used to directly promote or inhibit certain types of forest use practices. Just as important though, are policies that affect domestic and export markets, the macro-economy in general, and political stability — all of which need to be dependable and predictable for a long-term investment such as a managed forestry operation.

A final method for promoting forest investment is the development of market standards to certify the quality and origin of forest products. This process generally depends on the collaborative efforts of national governments, NGOs and international organizations. The goal is to develop a reliable method for certifying forest products that have been procured through responsible means and whose raw materials have come from sustainably managed forests. While certification is generally conceived of as a voluntary process, the objective is to encourage all producers to comply. The process requires donor agencies and multilateral lending organizations to fund the technical and structural aspects of this process. Private and public sector cooperation is also needed to conduct the monitoring and enforcement needed to assess the management of these sustainable forests.

Financing

Financing private sector investment in forest conservation and management can be achieved using a variety of strategies and monetary sources. Financing can come through purely private sources, public-private joint ventures, or some combination of private financing and public sector development of institutional and infrastructure support. Alternatively, concessions can be granted by the public sector and cost-recovery mechanisms can be used to reimburse the government for providing resource use rights. Mechanisms to promote investments (such as incentives) may be used to help private enterprises bear the costs of entering international markets, especially for new and promising environmentally friendly products. Financing can also occur at the international level through funding sources such as the GEF, joint implementation, NGO collaboration, or debt-for-nature swaps.

Admittedly, searching for financiers of forest management and conservation is not an easy task. Financiers should be ready to pay for the incremental costs required to generate forest services. Government funding using market-based cost-recovery mechanisms can include forest production and concession fees, taxes on land development, eco-tourism user fees, watershed conservation charges, royalties from bio-prospecting and others. On a global scale, efforts need to continue in the search for a means of compensating forest owners for the global services of biodiversity, climate control and carbon sequestration. In cases where forest land is managed by communities or indigenous groups, the government can assist these peoples in developing their own cost-recovery mechanisms. These monies could be earmarked for reinvestment into the forest sector or for compensating those who have invested in forest management and conservation. This may be facilitated by decentralization wherein municipalities are delegated the responsibility for overseeing the management of natural resources. NGOs and international monitors can also help ensure that reimbursement goes to the target actors, thus contributing to future investments in sustainable forestry.

International financing is another vital source of support. The United Nations' Agenda 21 identifies major needs for investment and advocates shared responsibility in forest finance by the international community, governments, and the private sector. With the continuing decline of official development assistance, private sector financing and multilateral lending may provide the bulk of the necessary additional funding. Multilateral lending projects, which in many cases represent models for private investment, should include sustainable forest use components as well as provisions for conservation set-aside areas, environmental education, and information sharing. It is also essential that development projects ensure that beneficiary countries and communities do not become entrenched in a long-term dependence on the lender, and that they secure the continuity of development efforts past the lifetime of the project.

International Mandate

Three international conventions relate directly or indirectly to the need for a better use of the world's forest resources. The Framework Convention on Climate Change, the Convention on Biological Diversity, and the Convention to Combat Desertification all emphasize the importance of forests in preserving a healthy planet and providing opportunity for future generations. The Convention on Climate Change outlines the obligation of developed countries to increase the financing of actions that will improve the climate in the global common interest, while the two other agreements emphasize the concept of sustainability as well as managing and conserving resources that lie within national boundaries.

In addition to the global conventions mentioned above, there are several regional agreements relevant to forests such as the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (1940), signed by 18 countries in Latin America and the Caribbean. The Treaty for Amazon Cooperation (1978) promotes a comprehensive management of the Amazon and its tributaries. Its implementing entity is the Amazon Cooperative Council which consists of high level representatives from eight countries. The Central American Convention for the Protection of the Environment (1989) calls for cooperation in sustainable development. The objective of the Central American Convention for Biodiversity and the Protection of Wild Areas (1992) is the conservation of biological resources in the subregion. The Central American Commission on Environment and Development is in charge of developing strategies that support both conventions. These agreements have reiterated the need for a number of improvements in the sector, such as improving financing through entities like the Global Environmental Facility, creating financial instruments and funding mechanisms at the local and national level, increasing domestic public and private sector investments in ecological conservation, and sustainable natural resource management.

Thus, the principal nations of the world have clearly given the mandate for global, regional and local efforts to improve the state of the world's forests. They recognize the problems inherent in the forest sector and have enumerated goals and objectives, and developed strategies, to combat them. However, in practice, the countries of the region have scarcely applied the policies, action plans and programs that have been proposed on the basis of the noble ideals set forth in the conventions.

Synopsis for the Papers Selected

Forest Resource Policy in Latin America represents the thoughts and creative ideas of a group of individuals whose professional careers have been dedicated to deciphering, analyzing, and improving the way forests and forest products are exploited, shared, and preserved. Their conclusions and suggestions are based on numerous and diverse experiences in the field and on synthesizing innovative ideas. The conclusions of each one of these chapters are relevant to different situations and together they provide an important contribution to the discussion on the policies concerning the forests of Latin America and the Caribbean.

Each paper presented in this volume addresses an essential element of the state and direction of forest management in Latin America. The authors have carefully analyzed many of the macro-economic conditions, political climates, and local realities responsible for the state of forests and forest management in the LAC today. In addition, the authors have traced the various schools of thought to illustrate why certain policies, investment strategies, and development tactics have been in effect, and where their evolution seems to be leading. The chapters here also make use of a wide array of case studies that include localized efforts, national investment strategies, and international treaties. The follow-up analyses hopefully serve to de-mystify many of the reasons for past successes and failures, in an effort to improve the chance of success for future efforts.

The chapter by Jan Laarman on *Government Policies Affecting Forests* sets the framework for the analysis of the tradeoffs of different policy options which are discussed in the other chapters of this book. Laarman explores not only forest policies affecting the sector and competing land uses but also extra-sectoral policies such as macro-economic and trade policies. He examines the public good and externality aspects that are not necessarily promoted by strengthening the private sector and liberalizing markets. He recommends that countries monitor the impact of reduced public spending on the capacity of forestry agencies to carry out their mandates. Foreign participation in forest investments should be made compatible with national socioeconomic and environmental objectives. The author concludes with suggestions on how to improve various policies in a way that stimulates responsible private investment in the region's forest lands while also providing for biodiversity preservation.

Ramón López, in his chapter on *Policy Instruments and Financing Mechanisms for the Sustainable Use of Forests*, urges an intensified but focused exploitation of natural resources in certain areas combined with the genuine protection of forests elsewhere. Scattered and undefined international efforts have coupled with contradictory domestic policies to make both of these objectives unreachable thus far. The chapter discusses features of an international agreement to protect most of the remaining forest. He shows that, just considering the value of carbon sequestration, preserving the tropical forest is an extremely profitable enterprise for the world. If the value of preserving biodiversity is also included, the net benefits for the world are even greater. The author offers a variety of policy instruments and then outlines a financial mechanism to help solve the problems. It puts extra emphasis

on the possibilities for global compensation of environmental services provided by Latin American forests.

In their chapter titled *Financing Forest Investments in Latin America: the Issue of Incentives*, Olli Haltia and Kari Keipi indicate that almost all Latin American countries are providing direct or indirect support to private sector forest investments. Capital market imperfections, as well as the long period of maturity for these investments, have resulted in high capital costs and the lack of liquidity for forest management projects. However, the use of incentives may be justified to compensate the forest owner due to possible environmental externalities. The authors conclude that if incentives are used they should be cost-effective, temporary and directed locally if possible. Rent-seeking behavior should be minimized and may be achieved by auctioning at least part of the funds. Indirect incentives through, for example, financing extension and research, may be more effective than direct incentives.

Marc Dourojeanni, in his paper *The Future of Latin America's Natural Forests*, claims that in Latin America natural forests are, by and large, not being managed. One of the main reasons is the low financial profitability of tropical forest management to the forest owner. Two possible ways to slow down deforestation may be by paying for the environmental services provided by forests and by producing highly priced environmentally acceptable “green products.” However, it may take time to establish the adequate conditions needed to implement these means. The author argues that, in the meanwhile, the best measure may be to establish and better manage the protected areas in the region. For industrial purposes, plantation forestry offers great prospects. For community forestry, agro-forestry techniques and managing secondary natural forests are more promising.

The chapter written by Ronnie de Camino, *Sustainable Forest Management: Relevant Actors and Policies*, analyzes the role of particular social and economic actors in the forest sector and the impact of existing policies in the region. Participation of the stakeholders in decision making is key to sustainable forest development. In the past, the utilization of forest resources has focused on extracting wood and non-timber forest products. This chapter identifies some promising experiences with sustainable management for these products. The author argues that little attention has been given to the potential of environmental services. It will be necessary to create policies and instruments that will permit key actors to capture income from these services.

Carlos Felipe Jaramillo and Thomas Kelly analyze the topic of *Deforestation and Property Rights*. They conclude that land tenure security alone will not halt the deforestation occurring in the region — a combination of reforms and policy changes is needed. Reforms related directly to land ownership should include issuing individual property rights for settled agricultural areas in order to stimulate agricultural intensification and diminish pressure on the forest frontier. Governments should eliminate the practice of requiring proof of land clearing in order to obtain legal title or credit and end colonization efforts in areas without agricultural potential. The authors also suggest that formal property rights to forests by indigenous and traditional communities should be strengthened, logging concession rights should be granted in favor of local forest dwellers, and restricted private property rights should be established over forest areas that cannot be adequately safeguarded under public ownership.

In his chapter on *Rights of Indigenous Groups over Tropical Forest Resources*, Julio Tresierra states that indigenous communities have clearly been lacking adequate ownership and user rights of natural resources in the tropical forests of Latin America. This is despite recent positive developments in indigenous legislation in some countries. Often the laws are contradictory and the application of national policies is unfavorable to indigenous groups. Specific actions are needed in land use regulation and titling, and in supporting investment programs in the communities. These programs need to take into consideration the cultural traditions and structures of decision making, both in the project design and execution and in the financing conditions. Training should be an important component in these programs, especially in strengthening negotiation skills and technical capabilities.

In the chapter titled *Rethinking Forest Resource Use Contracts*, Jared Hardner and Richard Rice challenge the current practices of forest concessions in Latin America and identify important constraints to sustainable forest management. They examine the limitations relating to economic viability, institutional capacity, technical knowledge and unobserved cultural and social norms by forest dwellers. Their recommendations are presented in four general areas: work *with* and not *against* financial forces, replace costly command and control mechanisms with periodic performance audits, promote the participation of affected interest groups, and increase the technical knowledge on tropical forest management. They also propose an area tax instead of the often complex and ineffective current revenue systems between the concessionaires and the state.

Markku Simula's chapter on *Trade and Environmental Issues in Forest Production* analyzes trade's potential role to contributing to sustainable forest management. "Environmental friendliness" is starting to be used as a marketing component for various forest products. Certification of forest management and eco-labeling of products offer interesting possibilities for the future. However, avoiding adverse impacts to small scale producers who may not be able to bear the high initial costs of certification, should also be an objective of its effective implementation. Market liberalization and structural adjustments have led to trade expansion with several negative effects on forests. These effects could be mitigated by complementary policy provisions. The author also notes that the use of subsidies in forest production may cause trade disputes. He states that log export bans and export taxes have a tendency to lead to inefficiency and that eco-taxes on forest products have been ill-conceived.

The final chapter of this book, *Future Directions for Policies and Financing*, attempts to draw some conclusions from the results of the analyses in the other chapters. It recognizes a central premise that forests have economic value and that a balance can be struck between their preservation and the contribution they make to short term economic development. It suggests a series of ways to improve national and international policies, studies the promotion of a range of forest uses and points out the need to increase investment. Finally, it identifies areas for future research in the valuation of forests on the basis of the many goods and services they provide. The development of criteria for sustainable forest management is called for as a private/public sector cooperative effort. These criteria would not only facilitate good resource husbandry, but may also facilitate green certification and the marketing of environmentally benign products. Additional work is needed in establishing new, innovative financial mechanisms both for investments in the production of marketable goods and in providing environmental services at the country and global levels.

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Ronnie de Camino is Professor of Forestry at Universidad para La Paz and President of RNT-S.A., a consulting company in natural resource management in San José, Costa Rica. He is a board member of several international organizations, including the Center of International Forestry Research (CIFOR), based in Indonesia, and the Dutch Foundation of TROPENBOS.

Marc J. Dourojeanni, formerly chief of the Environment Division at IDB headquarters, is the Principal Environmental Advisor of the Bank in Brazil. Dr. Dourojeanni was the first president of the Peruvian Foundation for Nature Conservancy, and has served as vice-president of the National Agrarian University of Peru and of the International Union for the Conservation of Nature.

Olli Haltia, an economist at the European Investment Bank, was previously with Jaakko Poyry Consulting, Ltd., U.K. He holds a Ph.D. from the London School of Economics and has studied forest sector development particularly in Brazil and Chile.

Jared J. Hardner, an associate at Industrial Economics, Inc., Cambridge, Massachusetts, holds a master's degree from Yale University's School of Forestry and Environmental Studies and has extensive experience as a natural resource economist working in Latin America.

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Jan G. Laarman, Professor of Forest Policy and Economics at North Carolina State University, has researched and taught forest economics in Brazil under the sponsorship of the Ford Foundation. Dr. Laarman is also a leader of a natural resource management program in Guatemala.

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Richard E. Rice, Director of the Natural Resource Economics Program at Conservation International, holds a Ph.D. in Natural Resource Economics from the University of Michigan's School of Natural Resources and the Environment. His specialization is forest policy in Latin America.

Markku Simula, a forest economist specializing in policy formulation, financing and trade, has worked in Latin America, Asia, Europe and Africa. He is the President of Indufor Oy, a forest consultancy agency, and Adjunct Professor at the University of Helsinki, Department of Forest Economics.

Julio C. Tresierra has served as a consultant on indigenous and development issue for many international organizations in Latin America. Dr. Tresierra is Professor of Sociology and Anthropology (emeritus) at Concordia University in Montreal, and holds a Ph.D. from the University of Notre Dame (United States).