



## WORKING PAPER 6

### Contributions of Tropical Forests To Sustainable Development: The Role of Industry and the Trade

by

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May 1990

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TO SUSTAINABLE DEVELOPMENT:  
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## CONTENTS

	<u>Page</u>
PREFACE .....	ii
ABSTRACT .....	iii
INTRODUCTION .....	1
PRECONDITIONS FOR MORE INTENSIVE MANAGEMENT .....	2
ALLOCATING LAND TO FORESTRY .....	3
Land Use Allocation Strategies .....	3
The Problem of Irreversibilities .....	4
THE ROLE OF INDUSTRY AND THE TRADE .....	5
Participating in Government Land Allocation Decisions .....	5
Improving Multiple Use/Sustained Yield Timber Management of Natural Forests .	6
Supporting Management of Preserves and Wilderness Areas .....	7
Supporting Effective and Efficient Conversion of Forest Land To Other Uses ....	7
Supporting Conversion of Nonforest Land To Forest Plantation .....	8
CONCLUSIONS .....	8

## PREFACE

This paper is the sixth in a series of working papers produced for the Forestry For Sustainable Development (FFSD) Program at the University of Minnesota. It was prepared for the International Tropical Timber Organizations Seminar on Sustainable Development of Tropical Forests, Bali, Indonesia, May 19, 1990. These working papers represent work in progress. Their purpose is to stimulate discussion among individuals working in the field of interest. The authors welcome comments on the paper.

The major objectives of the FFSD Program are to:

1. Improve the availability and usefulness of existing technical knowledge related to forestry for sustainable development - translate state-of-the-art scientific and technical information into practical and easily usable management guides and training materials that can be used effectively in planning and implementing development projects that will contribute to sustainable development; and
2. Improve the policy and organizational environment to encourage application of sustainability strategies - identify and develop effective institutional mechanisms, both at the policy and project levels, for introducing sustainability strategies into the development planning process at an early enough stage to influence project or program design.

The focus of the Program is on social forestry and related strategies within a watershed management framework as an integrating mechanism for moving toward sustainability in land use and in natural resource-based development projects. It involves an interdisciplinary group of faculty from the University of Minnesota, and associates at the University of Arizona, Yale University, Oxford University, the InterAmerican Development Bank, and other development groups. The FFSD Program is part of the University of Minnesota's Center for Natural Resource Policy and Management in the College of Natural Resources.

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## ABSTRACT

Sustained yield timber management on tropical forest lands becomes economically viable and of interest to industry only when:

- a) timber prices rise (scarcity increased) to levels where investment in more intensive management becomes profitable, and
- b) governments initiate and institute:
  - extensive programs of land classification, designation, and allocation;
  - effective regulations to guide and stabilize land management and use; and
  - incentives to make sustained yield management attractive to industry.

The first condition has been met in many tropical countries, but the second condition has not. As a result, we find few tropical forest areas where sustained yield timber management is practiced. Thus, a precondition for developing measures which industry can take to improve the contribution of tropical forests to sustainable development is to understand what governments must do to develop a conducive policy environment.

Confusion, uncertainty, and in some cases conflict arise when we try to develop an economic rationale for a long term sustained yield forest management strategy without specifying a clear policy environment within which it would operate and without having a clear idea of what portion of the forest likely will be dedicated to management for timber and under what conditions. Both the clarity and the stability of policies are critical elements in developing an economic rationale that is acceptable to private timber companies, because uncertainty weighs heavily in their basic investment decisions.

Given a stable and relatively honest policy environment that promotes or is consistent with sustainable development, industry will be in a position to take an active role in the sustainable management of that part of the tropical forest resource designated for timber production. It also will have an interest and role to play in supporting measures to manage those forests which are designated for other uses, such as biological reserves, conversion to agriculture, and so forth, because it will be interested in the stability of the overall land use system.

The paper identifies a number of measures which industry and the trade can use to contribute to a sustainable use of forest resources and to the broader goals of sustainable development. If given a supportive policy environment, industry and the trade most likely will use such measures. The measures relate to research, information generation and dissemination, support for local communities and government activity, support for organizations that deal with other uses of forest lands, and support for international cooperation and coordination of various activities.

## CONTRIBUTIONS OF TROPICAL FORESTS TO SUSTAINABLE DEVELOPMENT: THE ROLE OF INDUSTRY AND THE TRADE

by

Hans Gregersen, Allen Lundgren, and Gary Lindell<sup>1</sup>

### INTRODUCTION

We have been asked to discuss measures the forest industry and timber trade can take to help improve the contribution of tropical forests to sustainable development. From the industry and trade's point of view, the urgency of finding better measures to ensure the sustainability of the resource base on which they rely is evident. A rapidly shrinking resource base and ever increasing competition for remaining forest land for preservation and conversion to other uses means a depleted stock of suitable raw material.

In the early days of development in countries where forest resources were over-abundant, timber "mining" and conversion of forest land to agriculture and other uses were welcomed by the population as part of progress and development. The industry took what timber it wanted and then moved on to new forests. However, opportunities to move on to new stands became fewer and fewer over the years and pressures on remaining forest lands from competing users became greater and greater. This is the history of the early timber industry in the United States, Sweden, and most other developed countries.

In these countries, the increased pressures on the land led to increased pressures on the political systems to classify, designate and allocate lands for their best uses, including preservation. As forest land was taken out of timber production, and as timber became increasingly scarce, prices rose and more intensive forest management on the remaining forest lands became an economic reality, and in many cases a necessity. Establishment of plantations also became profitable. Government incentive policies evolved to guide the sustainable management of forests.<sup>2</sup>

History has started to repeat itself in tropical countries: Readily available new stands of timber are becoming more and more scarce in many countries. Indeed, in some countries, the forests and timber basically are gone. Pressures on governments to improve the forest resource situation are mounting in most countries. The time is rapidly approaching for

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<sup>2</sup> We have discussed the role of such policies in a recent paper for a seminar in Sabah, Malaysia. (Gregersen, H. and A. Lundgren. 1988. The role of incentives in U.S. forestry development: Implications for other countries. In *Proceedings of seminar on The Future Role of Forest Plantations in the National Economy and Incentives Required to Encourage Investments in Forest Plantation Development*, eds. H. T. Tang, C. Pinso and C. Marsh, Kota Kinabalu, Sabah, Malaysia, 30 November-4 December, 1987. Kota Kinabalu, Sabah Malaysia: Sabah-World Bank Forestry Technical Assistance Project, in collaboration with Tropenbos).

intensification of timber management in the tropics and for a rationalization of the markets on which the tropical timber trade depends. The question is: what is needed to stimulate the changes needed? What is needed to move more toward sustainable management of tropical forests? That is the overall point for discussion at this seminar.

### PRECONDITIONS FOR MORE INTENSIVE MANAGEMENT

In the case of the timber industry in developed countries, sustained yield management did not become economically viable and of interest to industry until two conditions were met:

- a) timber prices rose (scarcity increased) to levels where investment in more intensive management became profitable, and
- b) governments initiated and instituted:
  - extensive programs of land classification, designation, and allocation;
  - effective regulations to guide and stabilize land management and use; and
  - incentives to make sustained yield management attractive to industry.

The first condition related to prices and market signals has been reached in the case of some tropical countries. Given existing prices, sustained yield timber management, in a technical sense, could be introduced profitably on many tropical forest lands, particularly those in S.E. Asia and West Africa.<sup>3</sup>

In fact, higher prices have not led to sustained yield management. If anything, they led in the recent past to more rapid timber mining. This is partly because, while sustained yield management may have become profitable, it is even more profitable for the industry to take all merchantable timber, which often results in damage to residual stands to a point where sustained yield management becomes impossible.<sup>4</sup> Thus, the issue is not whether sustained yield management is profitable or not, but, rather, whether the policy environment exists to encourage industry to practice such management where it is considered socially desirable, but relatively unprofitable.

In sum, it appears that the main reason why one finds so little intensive management in practice is that the second condition above has not been met in most tropical countries. If the basic policy environment within which industry must operate is not compatible with sustainable development objectives, and if government officials promote short term, and in some cases self-serving, objectives, then it is a waste of time to design and discuss "rational" measures for industry to take to promote sustainable contributions of tropical forests. In

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<sup>3</sup> Species composition of the sustained yield forest might be quite different than the original species mix.

<sup>4</sup> This point has been made in a recent paper by Mikael Grut ("Economics of managing the African rainforest." Paper prepared for the Thirteenth Commonwealth Forestry Conference, September, 1989. Paper revised in February, 1990).

such cases the focus needs to turn first to the public sector and ways to improve its role in promoting sustainable development.<sup>5</sup>

We need to emphasize a basic point: Private industry in a market or mixed economy initiates actions based on the market and policy signals that affect its ability to profit, grow and be secure. If appropriate signals do not exist, then only in rare instances will industry initiate actions that are socially desirable but financially irrational (i.e., involve lowering of profits, sales, or growth).<sup>6</sup> If we want change in the timber industry and the way it manages timber lands, then we need to focus on those signals that will stimulate desired change. Such signals relate in a major way to national policies concerning land allocation and use and what results from such uses over time.

### ALLOCATING LAND TO FORESTRY

Certain principles and conclusions concerning the contributions of forests to sustainable development have emerged from work over the past three years in the Forestry for Sustainable Development Program, headquartered at the University of Minnesota.<sup>7</sup> One such conclusion is that there is no inherent reason why the present stocks of, and flows from, forest resources in the tropics should be maintained at their existing levels and in their existing condition in order to achieve sustainable development. All deforestation is not bad; and some afforestation of nonforest lands is desirable. Thus, some natural forests should be maintained for intensive production of timber and other products; some should be preserved undisturbed in their natural states; but some should be converted to other uses, including intensive tree crop plantations. At the same time, some nonforest lands should be used for forest plantations.

#### Land Use Allocation Strategies

Most countries have a dynamic process of land allocation and land use adjustments. Forests and forest lands provide only one input into this process. Each country, at any given time, has its own implicit or explicit strategy and policy on forest preservation, use and conversion.<sup>8</sup> In shaping the forestry sector part of an overall land use strategy and policy,

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<sup>5</sup> This point has been dealt with in detail most recently by Robert Repetto and Malcolm Gillis in their 1988 book: *Public Policies and the Misuse of Forest Resources*. Cambridge: Cambridge University Press. 432pp.

<sup>6</sup> Our discussion here assumes a market or mixed economy, with the private sector (industry) operating with the traditional objectives of profits, stability and company growth. If we are dealing with a centrally planned or socialist economy (ownership by the state) then some of the conclusions presented here do not apply. In fact, the whole question addressed becomes an academic one, since the industry and trade are part of government or the public sector and thus fit under the heading of one of the other speakers in this seminar.

<sup>7</sup> The Forestry For Sustainable Development Program (FFSD) is a program which involves collaborators from a number of universities and international development agencies. It is funded by the Pew Charitable Trusts and the University of Minnesota.

<sup>8</sup> In many countries there is no formal, explicit policy. However, there always is a somewhat structured policy environment within which land allocation and distribution take place.

countries need to consider, decide on, and adopt a combination of four land use mechanisms:

- 1) actively manage and utilize some of the natural forest on a physical/biological sustained yield basis, perhaps augmenting the stock through afforestation, to provide goods and services wanted by people, i.e., the traditional sustained yield/multiple use forestry model;
- 2) preserve some of the natural forest ecosystems intact, i.e., establishing and conserving forest reserves to maintain biological diversity and to perpetuate a gene pool which may be of use in the future (this is a type of "insurance policy" for humans); in some cases some extraction of minor forest outputs may be included on a sustained yield basis, so long as such extraction does not disturb forest ecosystem structure, composition, and function;<sup>9</sup>
- 3) convert some of the natural forest to other forms of capital, i.e., through clearing forest land for agriculture, plantation crops, or intensively managed forest plantations, to meet increasing needs for food, fibre, and other goods and services that cannot be met as efficiently from the natural forest; and
- 4) convert some nonforest land to forest plantation, i.e., afforestation or reforestation with native or exotic species to provide a variety of needed goods and services.

Most countries have major programs involving these strategies, and spend considerable effort determining what combination of preservation, management, and conversion of land uses will best meet needs.

### **The Problem of Irreversibilities**

Because of economic, social and technical changes, the optimum mix of land uses is bound to change over time with the growth and development of a country. This is where the problem of irreversibilities enters the picture. If all land use changes were easily and quickly reversible, a country could go back and forth from forest to other uses and vice versa as conditions warrant. However, it is not that simple. Virgin or old growth forest can be converted rapidly to agricultural or grazing land, but not vice versa. In most cases we are dealing with an irreversible process, at least within a time frame meaningful to humans. Thus, poor decisions concerning conversion of virgin forest to other uses can lead to serious problems of nonsustainable development, and can come back to haunt countries forever.

It is the role of the public sector, not industry and the trade, to develop the laws and programs needed to protect against rash and poor decisions regarding conversion of natural forest to other uses, i.e., to take irreversibilities into account in decision making. However, industry and the trade do have the responsibility to participate in the process of making

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<sup>9</sup> An interesting issue for international discussion is: who should pay for this "insurance policy" for mankind, since the benefits are likely to be received primarily outside the countries in which the tropical forest is located, e.g., as in the case of the Rosy Periwinkle from Madagascar.

such decisions, since they directly affect industry decisions on investment in forest management. Our concern in this paper is with the measures that are available to the industry and the trade to contribute to such decisions, and with the measures they can take to help implement those decisions, once they are made.

### **THE ROLE OF INDUSTRY AND THE TRADE**

Thus, the basic question addressed here is how industry can contribute to:

- a) Insuring that governments (societies) make wise choices in allocating forest lands to preservation, multiple use/sustained yield management, conversion to other uses, and in allocating nonforest lands to forestry uses;
- b) Making sure that those areas that are committed to timber management are managed and utilized in the most economically efficient and effective manner possible, given existing market and policy signals; and
- c) Supporting constructive management of those forest lands that are designated for other uses.

Most of the remaining high tropical forests are in public ownership. If one looks at any developed country that has sizable areas of public timber land, one finds a private industry and market (or trade) that is developing measures to encourage sustained yield management of the public forest in response to a complex set of market signals, public laws, regulations and incentives (fiscal and other). There is no reason to expect industry operating in the tropical countries to act any differently, i.e., it is initiating activity in response to market signals and to public rules and incentives which, hopefully, represent a broader view of how society wants to balance economic costs and benefits with preservation of public (and private) tropical forests.

Thus, emphasizing the above point, we have to recognize from the outset, as did the organizers of the seminar, that the measures industry and the trade can take, they will take only if they see economic or other corporate advantage in terms of their objectives and constraints. We believe that if the policy environment is appropriate, then there are measures that industry and the trade can and will take that go far beyond the narrow confines of management on forests that are designated for timber production.

### **Participating in Government Land Allocation Decisions**

Industry and its associated trade organizations constitute one of a number of groups that have differing interests in what happens to the remaining tropical forest lands. In most economies, public decision making on land use allocations depends on the input of advocacy groups--groups that have certain interests that they promote with decision makers (legislators and administrators). Through interaction of these various groups, decisions are made. If one group dominates, then decisions often are made that are not optimum from society's point of view. Forest industry has a responsibility to society to let its point of view be heard in a legitimate fashion in the public debates over land use allocations. Within its role as advocate, industry can:

- draw upon its considerable experience in providing improved information on implications of alternative land use allocations, for the timber industry and trade, processors, exporters, importers, consumers, etc.;
- lobby in a legitimate fashion (insure "checks and balances" in public decision making);
- participate in and support land exchanges which would improve a country's pattern of land use; and
- participate in international cooperation and action related to land allocations, e.g., in the case of critical species, habitats, global climate change, etc.

### **Improving Multiple Use/Sustained Yield Timber Management of Natural Forests**

Once natural forest lands are designated for timber production, e.g., through creation of national multiple-use forests, concession agreements, sale to industry, lease, or other means, then industry has a major role and responsibility to promote sustained yield management, if the economic and policy environments exist to encourage such management. (The point was made earlier: industry and the trade initiate activity in response to existing and anticipated market and policy signals. Within this framework of responsibilities, industry and the trade can:

- develop appropriate technologies through research to:
  - improve silvicultural systems and define "best practices" more clearly;
  - improve logging efficiency and reduce logging damage;
  - improve processing efficiency;
  - increase number of species used;
  - develop and promote new products (including nontimber uses);
  - develop new markets for smaller materials/residues, i.e., promote more intensive and profitable utilization so sustained yield management becomes more attractive financially;
- help improve the public's understanding of forest management and the role of forests in development;
- support government research aimed at improvements in forest management;
- support and guide local community adaptation to changing economic conditions and to local utilization and processing, where such can be done efficiently and competitively;
- develop management continuity that promotes sustained yield, e.g., through providing advice to governments on minimum concession or contract areas and time lengths to make sustained yield management systems competitive and profitable;
- improve local human resources through training and other activities that increase capabilities of local people to manage and utilize forests on a more sustainable basis;

- build up permanent infrastructure for development of the communities which will come to depend on sustainable forest-based activity (e.g., local towns, schools, roads, communications facilities, health facilities, power facilities, financing/credit facilities).
- improve vertical and horizontal integration within the industry to improve efficiency and effectiveness with which forest resources are managed.

### **Supporting Management of Preserves and Wilderness Areas**

Industry should have a strong interest in supporting those groups responsible for lands designated for wilderness or preserve status. There are potential advantages from developing strong working relations and alliances with environmental agencies and NGOs. Such alliances can lead to stronger support from those groups for policies the industry believes are essential for efficient and effective management and utilization of lands designated for timber or multiple uses. Measures which the industry can take include the following:

- provide financial and technical support for developing strong boundaries and a solid management structure for wildland preserves;
- support environmental groups in their efforts to identify critical areas and to develop buffer zone and other management strategies for protecting virgin forest areas;
- provide financial and technical support for research in forest preserves to identify new species and characteristics of species and of products that are or could be derived from tropical forests, and to improve understanding of these diverse and endangered ecosystems.

### **Supporting Effective and Efficient Conversion of Forest Land To Other Uses**

Industry has an interest in orderly and timely conversion of forest lands that have been designated for other uses. For example, when certain forest lands are converted to roads and agricultural settlement, there can be direct impacts on those lands that were designated to remain under forest for timber management, if effective measures are not instituted to protect such lands from spontaneous encroachment and settlement. Similarly, there are opportunities for industry to gain raw material in the conversion process, if it is timed appropriately. Thus, for these and many other reasons, industry has a direct interest in being involved in the planning and implementation of the conversion process. Based on its experience, industry and the trade can take the following measures:

- provide information on soil capabilities, that can be used in making specific conversion decisions;
- share infrastructure with new, nonforest users of the converted land (when such lands are contiguous to timber production areas);

- make best use of materials removed during clearing process; this includes test utilization of lesser known species;
- provide advice on tree crop fallows, where such are relevant for lands converted to agriculture;
- support research and action to develop effective buffer zone management on converted lands contiguous to remaining timber production lands.

### **Supporting Conversion of Nonforest Land To Forest Plantation**

Industry has a natural interest in conversion of some nonforest lands to forest plantation. In some tropical countries, partly because of loss of natural forest and partly because of the underlying economic rationale, such conversion is proceeding at a fairly rapid rate and can be expected to continue into the future. Measures which the industry can take to help this process include:

- provide advice on choice of location, species, productivity, size constraints, and other factors related to forest plantation establishment;
- provide management advice and marketing support, where the new forest lands will remain in government hands or will be part of the nonindustrial forest estate of a nation;
- provide funding for purchase or long term leasing of such lands, and their subsequent management, where government wants them to go into the private industry sector;
- provide seedlings and other materials for use by non-industrial private land owners and by government;
- collaborate with public research organizations to identify and test appropriate species of trees and management regimes for fast-growing plantations over a range of sites and climates.
- demonstrate the relative levels of profitability associated with different types of conversion.

### **CONCLUSIONS**

The timber industry and trade have a role to play in promoting improved contributions of tropical forest lands to sustainable development. However, the extent and effectiveness of industry's contribution depends on a number of factors. Specifically, we conclude that:

- Sustained yield management becomes economically viable and of interest to industry only when:

- 1) timber prices rise (timber scarcity increases) to levels where investment in such management becomes profitable; and
  - 2) governments initiate and institute:
    - extensive programs of land classification, designation, and allocation;
    - effective regulations and incentives to guide and stabilize forest land management and to make sustained yield management attractive to industry.
- The first condition has been met in many countries, but the second has not. As a result, we find few tropical forest areas where sustained yield timber management is practiced. Thus, a precondition for developing measures which industry can take to improve the contribution of tropical forests to sustainable development is to find the means for changing the basic policy environments within which commercial timber industry and trade operate.
  - The point made above bears emphasis: the economic rationale for sustained yield management of tropical forests depends not only on the level of prices and technologies available, but also on the policy environment and what shares of the remaining forest go into multiple use or timber production forest, into reserved undisturbed forest, and out of forest into other uses, and on what shares of other lands are converted to forest plantation.
  - Confusion, uncertainty, and in some cases conflict can arise when we try to develop an economic rationale for a long term sustained yield forest management strategy without specifying a clear policy environment within which it would operate, and without having a clear idea of what portion of the forest likely will be dedicated to commercial management and under what conditions. Both the clarity and the stability of policies are critical elements in developing economic rationales that are acceptable to private enterprises, since uncertainty weighs heavily in their basic investment decisions.<sup>10</sup>
  - Given a stable and relatively honest policy environment that promotes or is consistent with sustainable development, industry will have the incentive to adopt the most effective and economically efficient means to manage on a sustainable basis that part of the tropical forest land designated as production forest. It also will have an interest and role to play in supporting measures to manage those forests which are designated for other uses, such as biological reserves and conversion to agriculture and roads.

In sum, the effectiveness of what the timber industry and the timber trade do to contribute to sustainable development depends directly on the market signals and policy signals they

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<sup>10</sup> In an earlier study of foreign investment in the forest-based sector it was found that a key factor hindering the willingness of U.S. forest-based industry in Latin America to invest in long term forest management was uncertainty concerning future policy changes and how they would affect industry. A precondition for longer term sustained yield management is more clarity and stability in policies in the forest owning countries. (Gregersen, H., and A. Contreras. 1975. *U.S. investment in the forest-based sector in Latin America*. Baltimore: The Johns Hopkins University Press.)

face. Such signals are national, but also international in scope. Thus, international organizations, and such programs as the Tropical Forest Action Plan, have a legitimate and important role to play in making sure that the signals are moving in the right direction to encourage an industry response that will contribute to a sustainable use of tropical forest lands, and, more importantly, to sustainable development in a broader context.