

Forest Law Enforcement Governance and Trade

Can Law Save the Forest?

Lessons from Finland
and Brazil

Sofia R. Hirakuri

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*This book is dedicated to the memory of my parents
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Abstract

Forests are among the most diverse and widespread ecosystems on earth; they provide mankind with a wide range of economic, social and environmental benefits. However, the forests are increasingly being threatened by unsustainable logging practices. Rampant deforestation in the tropics and international pressures have led governments of tropical forest countries to take actions to promote forest management of natural forests. However, in most countries forest management has been implemented improperly. Thus, low compliance with existing forest management laws, rather than lack of laws, is often a leading cause of unsustainable forestry practices in many tropical forest countries. Nevertheless, the degree of compliance varies across nations. This study examines the contrast of Brazil, a low compliance country, with Finland, the most successful country. The importance of forests and forestry is introduced, including a brief background of the forest resources. Focus is given to the Finnish model of forestry law enforcement, concentrating on factors that can be adapted to Brazil and other tropical forest countries. Some specific recommendations have been drawn from this cross-case study. These lessons might be useful for Brazil and other tropical forest countries which are trying to improve their forestry law enforcement system.

Introduction

Forests cover almost 25 percent of the world's land area (FAO 1999:1). Forests provide many environmental benefits, playing a major role in the hydrologic cycle, soil conservation, prevention of climate change and preservation of biological diversity. Forest resources can also provide long-term national economic benefits.¹ Logging is one of the most important economic activities in the forests (Barros and Veríssimo 1996:1); however, forests are threatened by unsustainable forest management practices that have various negative impacts (Bryant *et al.* 1997:15). Present logging operations can be characterized as 'forest mining', because no silvicultural measures are taken to guarantee the regeneration of exploited species, and forests become more susceptible to fire due to the loss of humidity (Uhl *et al.* 1996:154). Along with the forests, habitats for many species are being destroyed, resulting in concerns about species extinction and the loss of biological diversity. It is extremely important that logging occur in a prudent manner to preserve the forests and to guarantee their sustainability. One of the ways to achieve this objective is the establishment of forest policy which includes institutional and legal tools to achieve the development of forest activities such as forest management.²

A study in 1996 by the World Resources Institute (WRI) mapped the largest blocks of intact frontier forest³ on a global scale and identified those that can be characterized as threatened. Eight countries were determined to have sufficient forest left that, given careful stewardship, most of the original cover could be conserved. They are Brazil, Venezuela, Russia, Colombia, Canada, Guyana, Suriname, and French Guyana (Bryant *et al.* 1997). Russia, Canada, and Brazil alone host almost 70% of the world's remaining frontier forests. Brazil ranked first among countries with the highest plant biological diversity in their forest (Bryant *et al.* 1997). In addition, the Brazilian Amazon comprises one-third of the world's tropical forests (Barros and Veríssimo 1996:1).

Brazil, like the countries in Central Africa, Latin America, and Southeast Asia, often approaches the problem of the forests from the viewpoint of how these forests can be developed sustainably and best be used for enhancing the prospects of development. The deforestation rate in Brazil is not that high compared to Southeast Asia, where the forest has been almost totally destroyed. However, Brazil has experienced uncontrolled timber exploitation which began to accelerate in the beginning of the 1980s. In order to avoid further unplanned development, it is critical at this point to discover how to stop this trend of unsustainable timber exploitation. Key to the solution is the implementation of sustainable forest management.

The Brazilian government has made efforts to regulate the forests since the seventeenth century (Wainer 1991:21). The federal government is responsible for the stewardship of a healthy environment⁴ and the protection of flora⁵ by making laws and applying them. Nevertheless, illegal predatory logging predominates in the Amazon, as documented by three major government reports and many other studies. First, evidence accumulated by the Brazilian Institute of Agriculture Research (EMBRAPA) shows that the federal government has failed to enforce forestry regulations in relation to forest management, indicating widespread failure to implement forestry laws.⁶ Second, the technical screening of forest management plans, as conducted by the Brazilian Institute of the Environment and Renewable Natural Resources (Instituto Brasileiro do Meio Ambiente e Recursos Naturais Renováveis-IBAMA), shows that 75% of the plans presented irregularities (IBAMA/MMA 1997:33). Third, the report of the Federal Strategic Affairs Secretariat shows that 80% of timber production in Brazil comes from illegal sources, indicating the widespread illegality (Secretaria de Assuntos Estratégicos 1997:3).

Consequently, national and international demand has increased for better and more effective logging control, and there is a requirement for more transparency in the process of restructuring public policies related to forest and non-forest policy (Ecoporé 1992; GTA/Amigos da Terra 1997:106-107).⁷ Recognizing that it is necessary to change the legislation and the mechanisms of application for forestry legislation, the Brazilian government has begun various initiatives to intensify control and to revise forest policies. Among the initiatives is the revision of the forest management law to promote the adoption of sustainable management of private forested areas (Ministério do Meio Ambiente 1998:13-14; Secretaria de Assuntos Estratégicos 1997:6).⁸ However, no data exist on the actual state of logging control to guide this revision process. The challenge is to ensure that forest management is conducted properly to guarantee the sustainability of forest resources. This will require appropriate enforcement actions by the governments of tropical forest countries. This study addresses that challenge and thereby contributes to the existing knowledge of the enforcement of forestry laws.

In Brazil, as well as in most tropical forest countries, it is implementation, rather than policy, that is the problem. In many tropical forest countries, low compliance with existing forest management laws, rather than lack of laws, is often a leading cause of unsustainable forestry practices. Nevertheless, the degree of compliance varies across nations. Modifications are needed to achieve compliance. Low compliance raises a series of questions as to the enforcement of forestry laws. This study examines the contrast between Brazil, a low compliance country, and Finland, the most successful country. As mentioned above, illegal predatory logging is widespread in Brazil. The Brazilian government has made efforts to enforce the forestry laws in many ways, but they have still ended in failure. In the Brazilian case, logging practices are highly regulated; however, the system itself is contradictory because compliance with the laws to protect the forest is actually more difficult than non-compliance. The reasons for this failure, as indicated in Chapter II, are problems related to legal and administrative procedures, human resources, and financial resources. These include: 1) a complicated administrative procedure to procure logging permits; 2) a deficient process of forest control; 3) low rate of compliance with forest laws; 4) a deficient legal system to impose effective penalties; 5) institutional problems of the enforcement division; 6) the scarce budget allotted for field

enforcement at IBAMA; and 7) economic incentives unfavourable for sustainable forest management.

In order to deal with these problems, a model of successful experience is needed. This model should be adaptable and applicable in Brazil. Among various countries with a long tradition in forestry, Finland is an exemplary case of a successful model. Finland has high compliance: 96% of forest owners complied with the forestry laws in 1997. In the past, for instance from 1935 to 1960s, the non-compliance level was pretty high and stable. However, since 1965 Finland has experienced a substantial decrease in a number of violations and achieved the present state. Today's high compliance is a result of the emphasis on forest extension, economic incentives, and many years of committed enforcement. Thus, it presents certain elements that can be adapted to Brazil and to other tropical forest countries. This study examines the degree of compliance with forest management laws in Finland and Brazil, and analyses the factors that influence compliance.

This study aims to identify and highlight those variables which could be influenced or implemented in tropical forest countries to promote a sound forestry or sustainable forest management. It is divided into four chapters.

Chapter I reviews the importance of the forest and forestry. It gives an overview of world forest resources, and particularly those in Finland and Brazil. It also provides a conceptual framework to understand sustainable forest management and how it relates to sustainable development. It emphasizes the increasing need to promote forest management in order to stop the decline of the world's forest resources.

Chapter II reviews the existing implementation of forestry laws in Brazil. It starts with a discussion of the importance of forestry in Brazil as well as the government's policy, in particular, the linkage between forest policy and non-forest policy. Both timber companies and forestland owners are required in their operations to comply with environmental and forestry laws and regulations. This chapter examines the degree of compliance and identifies shortfalls in the present implementation relative to sustainable forest management. The discussion of enforcement approaches requires the judicious consideration of an array of contributing factors, many of them of a cross-sectoral nature, including unsustainable development policies related to sectors such as agriculture and cattle ranching. The result brings together findings highlighting those factors which have led to poor enforcement, and identifying gaps in order to guide further governmental enforcement work.

Chapter III is a case study of the Finnish forest law enforcement system as an exemplary model. It provides an overview of compliance with and enforcement of forest management laws by analysing enforcement instruments such as a regulatory approach, a consensus-oriented approach and a market-oriented approach, and other factors that influence compliance. What are the variables that affect compliance and corresponding enforcement? The variables that affect compliance with forest laws can be divided into two broad categories: (1) factors that can be applied to Brazil and to other tropical forest countries to get better compliance; and (2) factors that cannot be applied to other countries. Even those factors that cannot now be fixed have the possibility of change in the long run. This chapter describes the findings without interpretation.

Chapter IV presents a cross-case analysis of Finland and Brazil, with references to the experiences of other Latin American countries. It discusses the reasons why Brazil and other Latin American countries have failed, and major changes that are

possible to improve the system of forest law enforcement. Although the conditions under which forestry is practiced differ greatly among the countries, Finland offers many exemplary approaches to the enforcement of forest management in tropical forest countries. This chapter analyses the application of regulatory, economic instrument, and consensus-oriented approaches for forest management, and recommends practical ways to improve such implementation.

In conclusion, a synthesis of lessons learned to ensure sustainable forestry in Latin America's tropical forests is presented. Analysis of the enforcement approaches which the countries have taken indicates that a successful policy must be a blend of regulatory, market-oriented, and consensus-oriented approaches. Concerted action needs to be taken at the national and international levels to protect the world's forests. Action will be successful only if it takes into account the interdependence of the economic, social, and cultural factors that bear on the management of forests.

Chapter I

The Sustainable Forestry Challenge

I. An Overview

Forests are among the most diverse and widespread ecosystems on earth. They are critical in meeting human needs for water, food, shelter, medicine, fuelwood, fodder, and timber. They provide a wide range of environmental services, which include biological diversity conservation, watershed protection, protection of soil, mitigation of global climate change, and protection against desertification (FAO 1999:41). Forests also play a social role, as a home to diverse groups of indigenous peoples and providing recreational benefits.

However, the human negative impact on forests is a growing concern (OECD 1993:30). The Agenda 21 document highlights the importance of combating deforestation, and enhancing the protection, sustainable management and conservation of all forests to preserve soils, water, air and biological diversity.⁹ The 1992 Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests (hereinafter Forest Principles) also emphasizes sustainable forest management in order to meet the needs of present and future generations (UNCED 1992b:Principle 2.[b]). According to the Forest Principles, forests have four major kinds of value: ecological, economic, social, and cultural/spiritual. These issues have been well-documented in many reports; therefore they will not be discussed here. Forests are traditionally valued for their timber. Although forests offer many economic benefits from non-timber products, the predominant product in international trade is timber.¹⁰

Forests cover almost 25% of the world's land. According to FAO, approximately 3454 million ha of the earth's surface are covered with forests, including natural forests and forest plantations. About 55% of the world's forests are located in developing countries, with the remaining 45% in developed countries. By region, Latin America and the Caribbean account for 27%, Europe 27%, Africa 15%, North America 13%, and Asia/Oceania 18% (FAO 1999:1-2). In terms of the distribution of tropical forests, Latin America has the most tropical forests, followed by Africa, Asia, and the Pacific region (Sharma 1992:21). Today, only one-fifth of the world's original forest cover remains in large tracts of relatively undisturbed forest, called frontier forests.¹¹ Brazil's Amazonian forests are particularly important because they contain one of the world's most diverse ecosystems and the single largest primary tropical forest in the world (Sharma 1992). The tropical forest is especially rich in species diversity. Thus, its role

for environmental, cultural and scientific purposes is especially important and needs to be considered in the use and management of forest resources.

The forestry sector has been important for many countries' economies. Table 1 shows the relative importance of forestry between regions. Its average portion of GDP in developed countries is only 1%, compared to 4% in developing countries.

Table 1. Forestry's share of GDP and international trade by region

Region	Percentage of GDP	Percentage of trade
Africa	6	2
South America	3	3
Asia	2	2
North/Central America	2	5
Europe	1	3
Oceania	2	3
Former USSR	2	4
Developing countries	4	2
Developed countries	1	4
World	2	3

Source: FAO State of the World's Forests 1997.

International trade in forest products is important economically. Although only about 6-8% of production enters the international market as primary products, the export value was estimated to be US\$114 billion in 1994.¹² Tropical timber products comprise only a small share of exports, which corresponds to 16% of industrial roundwood exported.¹³ The forest sector and timber trade are important to tropical forest countries because: a) the forestry sector contributes to the economies of producer countries; b) exports of primary and value-added forest products generate significant foreign exchange for some countries; c) timber industries are a source of considerable income and employment in many developing countries; and d) forest products contribute to other sectors, such as charcoal in the Brazilian steel industry, and fuelwood in the tea, ceramics, lime and tobacco industries of many tropical countries (FAO 1997:35).

The tropical region has the largest area of forest decline in the world and most deforestation is taking place in developing countries. In terms of the extent of forest cover loss by region, deforestation is occurring most rapidly in South America, insular Southeast Asia and Central Africa (Table 2). Brazil, Indonesia and Zaire are the countries which incur the highest annual forest loss (Table 3). It should be noted that a large portion of deforestation in Latin America and the Caribbean countries has occurred in Brazil and Bolivia, which account for 47% (FAO 1997:189). Since the existing data on deforestation rates is not reliable, it is hard to predict accurately how fast tropical forests will disappear. Nonetheless, if the present trends continue, all the remaining tropical forests may be lost during this century.¹⁴

Tropical forest deforestation, in particular, is one of the key environmental problems that faces the world. The loss of tropical rain forests is having a profound and devastating world impact because, biologically, they comprise the richest

Table 2. Change in forest cover 1990-1995

Region	Land area		Forest area		Annual change	
			(thousand ha)		(%)	
Asia						
South Asia	412 297		77 137	141	0.2	
Continental Southeast Asia	190 125		70 163	1 164	1.6	
Insular Southeast Asia	244 417		132 466	1 750	1.3	
Total Tropical Asia	846 839		279 766	3 055	1.1	
Africa						
West Sahelian Africa	527 959		38 827	295	0.7	
East Sahelian Africa	469 666		57 545	420	0.7	
West Moist Africa	203 498		46 324	492	1.0	
Central Africa	423 341		204 677	1 201	0.6	
Tropical Southern Africa	552 903		141 311	1 158	0.8	
Insular East Africa	58 875		15 220	131	0.8	
Total Tropical Africa	2 236 242		503 904	3 697	0.7	
Latin America						
Central America	51 073		19 631	451	2.2	
Caribbean	22 859		4 425	78	1.7	
Tropical South America	1 385 678		827 946	4 655	0.6	
Total Tropical America	1 459 610		852 002	5 184	0.6	

Source: Elaborated from FAO data (State of the World's Forests 1997).

Table 3. Change in forest cover between 1990-1995 by selected tropical forest countries

Selected Country	Total forest		Total change 1990-1995	Annual Change	Annual Change rate
	1990	1995			
			(thousand ha)		(%)
Africa					
Zaire	112 946	109 245	3 701	740	0.7
Asia					
Philippines	8 078	6 766	1 312	262	3.5
Thailand	13 277	11 630	1 647	239	2.6
Malaysia	17 472	15 471	2 001	400	2.4
Indonesia	115 213	109 791	5 422	1 084	1.0
Latin America					
Costa Rica	1 455	1 248	207	41	3.0
Paraguay	13 160	11 527	1 633	327	2.6
Bolivia	51 217	48 310	2 907	581	1.2
Brazil	563 911	551 139	*12 772	2 554	0.5
World Total	3 510 728	3 454 382	56 346	11 269	0.3

Source: FAO (1999).

* This data differs largely from the data presented by the Brazilian government.

ecosystem on earth. The causes of deforestation have also been extensively documented in many reports in different contexts, therefore this study will not discuss them in detail. Deforestation can take many different forms, such as total elimination of forest cover or minor modification of the original forest cover. The causes of tropical deforestation are complex and are directly connected to the economic, social, and political problems of developing countries (Jeffrey 1985:179,182; Palo 1999:65; Bromley 1999:95-6; Rietbergen 1993:6-7; Kramer *et al* 1995:6). These causes vary from one region to another, including clearing of the forest for agriculture or shifting cultivation, cattle ranching, demand for fuelwood, and commercial logging (FAO 1999:viii).¹⁵ Other factors that contribute to forest destruction are fire, insect pests and diseases, storms, and air pollution (FAO 1997:151-2).

In many cases, the main causes of deforestation in Latin America have been policy choices by governments. For example, governments have often favoured the conversion of the forests into agriculture, cattle ranching, and other land uses (Repetto 1990:36; WRI 1985:3). The factors which lead to deforestation as a result of these governmental policies interact and follow a certain pattern. First, the loggers extract a few tree species of commercially valuable timber; then, the peasants clear the forest land for agriculture or cattle ranching (Repetto 1990:38). According to Repetto, 'many of those policies are driven by severe economic pressures afflicting debt-burdened developing countries.'¹⁶ As a rule, the deforestation spurred by development policies has not resulted in desirable economic development. In most tropical forest countries, valuable resources have been lost. However, deforestation can be controlled with good stewardship and appropriate policies (Repetto 1990:36; Jeffrey 1985:204). An appropriate enforcement system plays a crucial role in combating deforestation and in promoting sound forestry.

II. Forest Resources in Finland

Finland has vast forest resources and is the most densely forested country in Europe, followed by Sweden, Austria, Germany and France (FAO 1996). The forests are mostly coniferous and cover 71% of the total land area.¹⁷ Forest management is based on long rotation periods, generally 70 to 100 years in southern Finland, and 100 to 140 years in the northern area, depending on the species (Hakkila 1995:12; MAF 1999b:7).

Finland was the first country to conduct a systematic national forest inventory, carried out between 1920 and 1923.¹⁸ Since then, inventories have been carried out at ten-year intervals and show that Finland's forest resources have not diminished (Parviainen 1992:1). The country's current growing stock volume is the largest recorded since 1917. Annual felling is smaller than net increment even in forests used for wood production (METLA 1998a:39). Efficient forest management, rehabilitation of poorly growing forests, drainage, increasing density of forests, and fertilization largely explain the increase in the forest stock growth (FFA 1998:13-14).

The government became concerned about timber shortages and founded the National Board of Forestry in 1851 to monitor the situation (FFA 1998:4; Reunala 1999:234). A study conducted by a forestry expert found that the only pristine forests left were in Lapland and in the eastern region of Finland. Slash-and-burn cultivation had been the major cause of deforestation. Extensive tar production, cutting timber for shipbuilding, charcoal and fuelwood were other causes. Since

the state of the forests was poor, forest management became an important issue. As a result, the government imposed restrictions on the utilization of forest resources and field-oriented forestry education was recommended (Shepherd *et al.* 1998:165; FFA 1998; Reunala 1999; Parviainen 1992: 2). Sustainable production of wood has now replaced exploitation (Hakkila 1995).

The forest industry really took off in the early 20th century. As a result, timber supply became an important national interest and the government made many efforts to promote forest management. It established the Forest Management Association, Tapio, in 1907 and the District Forestry Boards (present Forestry Centres) in 1928. In 1950, it passed the Forest Management Association Act that created an association in every local government to provide professional services to forest owners (Reunala 1999:234). The 1950s also witnessed massive investment in the forestry industry, which increased the demand for wood. This made it crucial to intensify wood production. To that end, the government provided public funding for forest improvement in the 1960s (Niskanen & Pirkola 1997:28). This policy was so successful that 'during the latter half of the 20th century, forest-destroying cuttings and the threat of overexploitation of the forest resources [were] eliminated' (Hannelius and Kuusela 1995:134). Finland has not experienced any deforestation in the past 50 years (METLA 1998a:43).

The forest sector accounts for one-third of Finland's gross export income. The forest sector's share of GDP has been gradually decreasing.¹⁹ However, forestry is still important, particularly with regard to exports. In 1998, the country exported US\$38 billion of total goods, of which forest products accounted for 29%.²⁰

III. Forest Resources in Brazil

Brazil is a country with vast forest resources that occupy 551 million ha, or 65% of its total area (FAO 1999:135). The Brazilian rain forest comprises 30% of the world's forested areas (Mahar 1989:3). Almost all of Brazil's rain forest area is in the Amazon basin.²¹ Approximately 64% of the Amazon is covered by rain forests; other types of vegetation such as savannas (cerrado) and natural prairies cover the remaining 36% (Pandolfo 1994:160). The forest is rich in biodiversity.²² In addition to timber, the Amazon is rich in natural resources such as aluminium, copper, tin, nickel, iron, gold, manganese and natural gas (Pandolfo 1994:39).

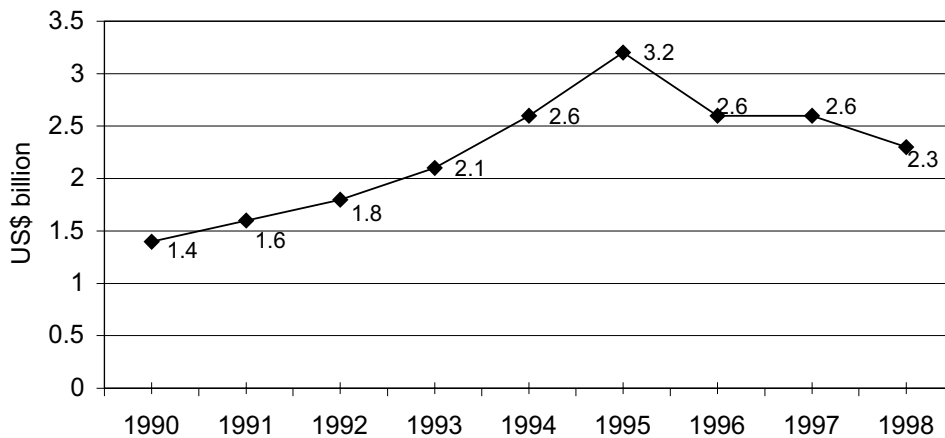
The Amazon rain forest was almost intact until the 1960s. The first cause of deforestation in the coastal area, where the temperate forests predominate, was the introduction of sugarcane plantations (Magalhaes 1998:14). Later on, the exhaustion of forests in the southeast region was due to massive plantations of cotton, coffee and other crops (Wainer 1991:51, 58).

The law regulating forestry in Brazil dates back to the 1600s (Wainer 1991:21). The present revised Forestry Code was enacted in 1965. Although there were many laws regulating the forests in one way or another, none of them dealt with forest management before this law. This study will focus on this Forestry Code, and subsequent regulations dealing with forest management.

The Brazilian forest sector has been important for the country's economy, although the contribution to the GNP has fluctuated in the past 30 years.²³ Brazil is the largest exporter of forest products in Latin America, and Brazil's share in the world

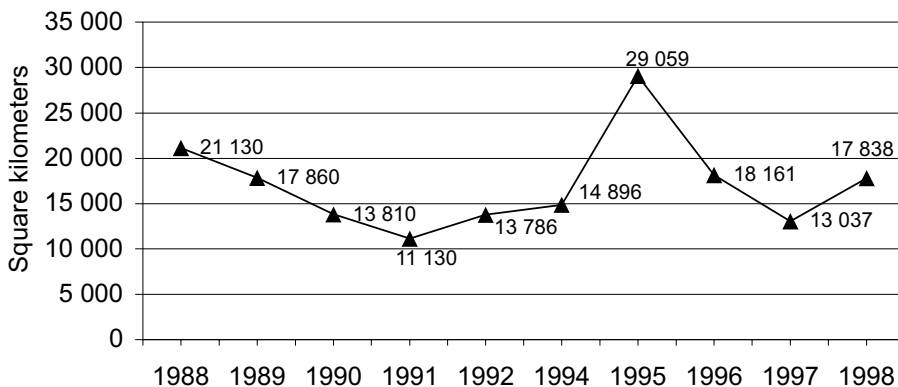
trade of forest products is gradually increasing.²⁴ According to FAO data, the export of forest products in Brazil has been increasing over the past 10 years (Figure 1).²⁵ The increase in exports of forest products in 1995 coincided with the year in which Brazil recorded the highest deforestation rate (Figure 2). So, the decrease of exports since 1996 could be attributed to the stricter forest regulation measures adopted by the government. Despite the increasing export of forest products, Brazil's production could be much larger given that it has the world's largest tropical forest (Kengen 1999).

Figure 1. Brazil: forest product exports from 1990 to 1991



Source: FAO Statistic.

Figure 2. Deforestation rate in the Amazon from 1988 to 1998



Source: Instituto Nacional de Pesquisas Espaciais.

There are two kinds of deforestation: complete clearing of the forest and partial logging of the forest. The two major causes of the first kind of deforestation are the conversion of forest land into agriculture and cattle ranching.²⁶ The major cause of the second kind of deforestation is selective logging, which is predominant in tropical forest countries. Timber exploitation consists of selective logging where a

few valuable tree species are extracted. This form of logging is dangerously deceptive because the forest appears to remain. However, in terms of tree species level, selective logging could cause genetic erosion (Hummel and Minette 1990:157; Silva 1992:258). The causes of deforestation take various forms, but they are primarily related to government development policies. The logging operation itself is not a direct cause of deforestation (INPE/IBAMA/MMA 1998:14).

The amount of deforestation in the Amazon has been significant. The deforestation rate was very high up until 1988, when the deforested area totalled 600 000 km² (Mahar 1989:7). Data collected by the National Institute of Spatial Research (INPE) shows that deforestation rate has been fluctuating since 1990 (Figure 2). According to INPE's data, the total deforested area in the Amazon is equivalent to 14% of its original forest cover.²⁷

The variation in the deforestation rate can be attributed to various reasons. There are two likely reasons for the 1989 deforestation rate drop: a) the changes in the governmental policy restricting the conversion of forest land into agriculture and b) the ceasing of tax concessions on cattle ranching that year.²⁸ The deforestation rate decrease in 1996 can be attributed to the reduction, from 50% to 20%, of the legally allowed area for clear cutting;²⁹ the moratorium on logging of mahogany and *virola* tree species;³⁰ and the intensive enforcement measures taken by the government, such as the 'Macauã Operation' in 1996 to 1997 (INPE/IBAMA/MMA 1998:18).

The deforestation data presented by INPE is mainly based on the effect of agriculture and cattle ranching activities. It does not include logging activities because the satellite images cannot differentiate the intact forests from selectively logged forests (INPE/IBAMA/MMA 1998:18). As the data shows, if the present deforestation rate of an average of 13 000 ha per year continues, the Brazilian rainforest will quickly disappear. Experts predict that the forest will be reduced to one-fourth in fifty years.³¹

IV. Tropical Forests: Sustainability and Forest Management

The consequences of deforestation can be detrimental to sustainable development, as discussed in the previous section. A fundamental question in the tropical forest debate is whether to conserve an area or to allow sustainable development within it. There are many stewardship options for managing forests.³² It is unreasonable to expect that all tropical forest resources can be maintained intact, especially given the projections for population growth in the developing countries (Kramer *et al.* 1995:11). Anderson states that the sustainable use of tropical forests must be a part of any long-term effort to promote conservation (Anderson 1993:172; Bryant *et al.* 1997:34; Sharma 1992:491). One option for sustainable development of the tropical forests is sustainable forestry practice.³³ This is an attractive option because it reconciles the economic interests of producers with the needs of conservation (Rice *et al.* 1997:34). Forest management of natural forests conserves the natural capital and helps to sustain important environmental services (Kirmse *et al.* 1993:1; Perl *et al.* 1991).

The concept of sustainability has been applied by foresters for centuries (Sharma 1992:347). Concepts of forest management change over time with socio-economic and political developments, as well as developments in the scientific understanding

of forest functions (Newton 2000). The most complex goal is the new requirement that forest management must promote sustainable development. In the context of forestry, the term 'sustainability' has been used to refer to 'sustained yield' management practices.³⁴ However, the meaning of this term has since expanded beyond mere 'sustained yield' to a broader concept which includes social and ecological services (Rankin 1983:369).³⁵ While the concept of sustainable forest management continues to evolve, some elements are common to most definitions of sustainable forest management. The economic, ecological and social elements must each be equally addressed in order to ensure sustainability (Kramer *et al.* 1995).

In sum, sustainable forestry is important in the overall process of sustainable development. Forest management which aims only at wood production is fairly well developed in most developed countries (Paehlke 1995:616-7). In contrast, a methodology for sustainable forestry which seeks multiple benefits from forests, combined with the conservation of biodiversity, has not yet been developed. In this regard, a number of international initiatives have begun to develop standard criteria and indicators of forest management.

Chapter II

The Failure of Implementation of Forestry Laws in Brazil

This chapter examines the current logging control mechanisms in Brazil. A number of problems were identified in the present system. These problems include legal and administrative procedures, human resources, and financial resources. Logging in the Amazonian forest has been unsustainable. One of the factors contributing to the predatory nature of logging in the Amazon is the lack of efficient control and monitoring of exploitation.

The purpose of this chapter is to provide an overview of compliance with and enforcement of forest management laws, by analysing enforcement instruments such as regulatory and market-oriented approaches, and the factors that influence compliance. In order to understand this issue, basic background information on forestry in Brazil was provided in Chapter I. This chapter will focus on the regulatory approach, economic incentive approach, and other issues that indirectly influence compliance with forest management laws.

I. Regulatory Approach

A. The Legal Framework of Brazilian Forestry Regulation

In order to understand the legal instruments used in administering Amazonian forestland, it is necessary to understand the Brazilian legal system. Brazil is a federal republic, and its political organization comprises the Union, the States, the Federal District, and the Municipalities (*Municípios*). The Federal Constitution of 1988 determines the basic law of Brazil. It prescribes the form of government, sets up political institutions, defines governmental functions, and establishes the rights and duties of citizens. Furthermore, it apportions power between the three branches of government: the legislature, the executive and the judiciary.

The process of enacting a 'federal law' begins when a general rule is presented to the two chambers of the national Congress by a deputy or a senator. It is then voted into law by the legislature and submitted for consideration by the president, who may veto it either totally or partially. A 'law-decree' is a rule promulgated by the executive branch and endowed with the compelling power of a federal law.

Such law-decrees are ordinarily established in times of urgency or in cases of national importance. In the Constitution of 1988, the term 'law-decree' was changed to 'provisional measure.' A 'Code' is a body of laws systematically organized and covering a specific field of the law.³⁶ Many articles of law or codes that are not self-executing³⁷ require special regulation in order to be activated. To this end, a 'decree'—as opposed to a 'law-decree'—is an act promulgated by the executive branch to activate legal provisions which explain the law and guide its implementation.

Forestry matters are governed by the Forestry Code, as well as a variety of decrees and administrative acts. IBAMA (the Brazilian Institute of the Environment and Renewable Natural Resources) issues acts such as administrative decrees (*Portarias*), normative instructions, service orders, and other resolutions that fill gaps in the existing laws. Forestry law follows the basic system in which general rules are outlined by legislation, regulated through decrees and implemented through administrative acts (Figure 3).

Figure 3. Legal instruments that regulate forest land use

General rule	
• Law	20
• Law-Decree (before 1988)	17
• Provisional Measure (after 1988)	3
↓	
Regulation	
• Decree	33
↓	
Implementation	
• Administrative Decree	54
• Normative Instruction	8
• Service Order	3
• Resolution	3

Note: The values correspond to the number of legal instruments put into place from 1965 to 1998.

1. Weakness of Forest Legislation

Various legal instruments are differentiated according to the legal power of the instrument. Laws and law-decrees have the highest authority. Second highest authority is granted to the executive decree, which has the same normative value as any law, but can be invalidated judicially. Least powerful are administrative acts (Meirelles 1995:160-174; Freitas 1995:37-9). The implementation of environmental legislation resides with the federal executive agency known as the Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA). The problem inherent in this system is that the majority of forest-related regulations are based on administrative acts, and these lack stability because they can easily be altered without the approval of Congress or be summarily invalidated judicially.

2. Major Laws Governing Forestry

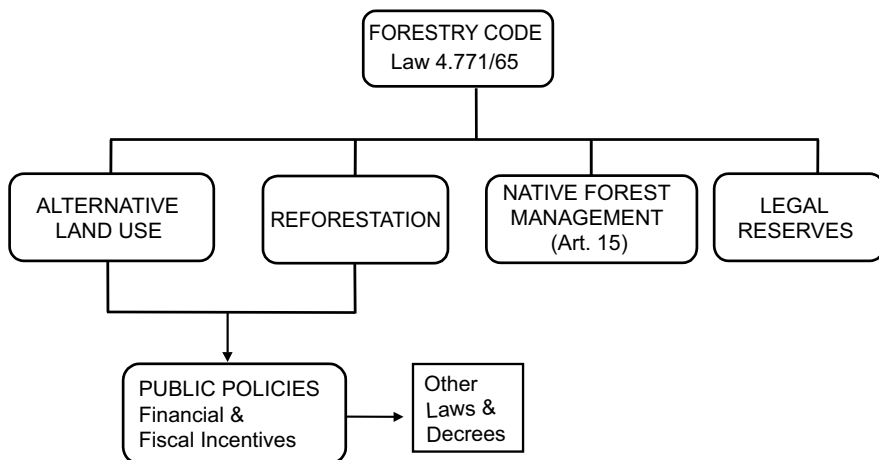
Three major laws govern forestry in Brazil. First, the Forestry Code, Law N° 4.771, is the principal legal document of general forest policy and was established in 1965. Second, the National Environmental Policy Law N° 6.938 of 1981 establishes the basic principles of governmental action to maintain ecological balance, planning, and law enforcement for the rational use of natural resources. The overall objective of this law is to preserve, improve, and restore environmental quality appropriate for living standards that will ensure socio-economic development.³⁸ Third, the Environmental Crime Law of 1998 regulates criminal and administrative penalties for behaviour and activities harmful to the environment.³⁹ This law imposes strict sanctions upon forest-related violations and sets fines ranging from a minimum amount of R\$50 (US\$31) to a maximum of R\$50 million (US\$31 million).⁴⁰ Until the advent of this law just a few years ago, all fines were based on administrative acts that easily were overturned in the courts.

3. Evolution of Forestry Legislation and Forest Management Law

The bulk of current forestry legislation is based on the Brazilian Forestry Code (Law 4.771/65), established in 1965. This code divides land use into four patterns: (i) alternative land use;⁴¹ (ii) native forest management; (iii) legal reserves; and (iv) reforestation⁴² (Figure 4). To some extent, the Forestry Code governs public lands and imposes limitations on privately held forest lands.⁴³

In order to analyse the development of forestry legislation, the number of legal instruments established by the 1965 Forestry Code will be considered, as well as the content of these instruments, with a focus on private land use.

Figure 4. Structure of forest land use legislation



Since the promulgation of the Forestry Code in 1965, more than 140 legal instruments of all levels in the federal sphere have been established. In the first two decades, legal instruments related to forest-based industries⁴⁴ predominated (Figure 5). Later instruments showed more variation in the land use patterns they addressed. Among them, some legal instruments regulate more than one use pattern; for instance, the logging of native forests and clearcutting for alternative land use are regulated by the same decree.

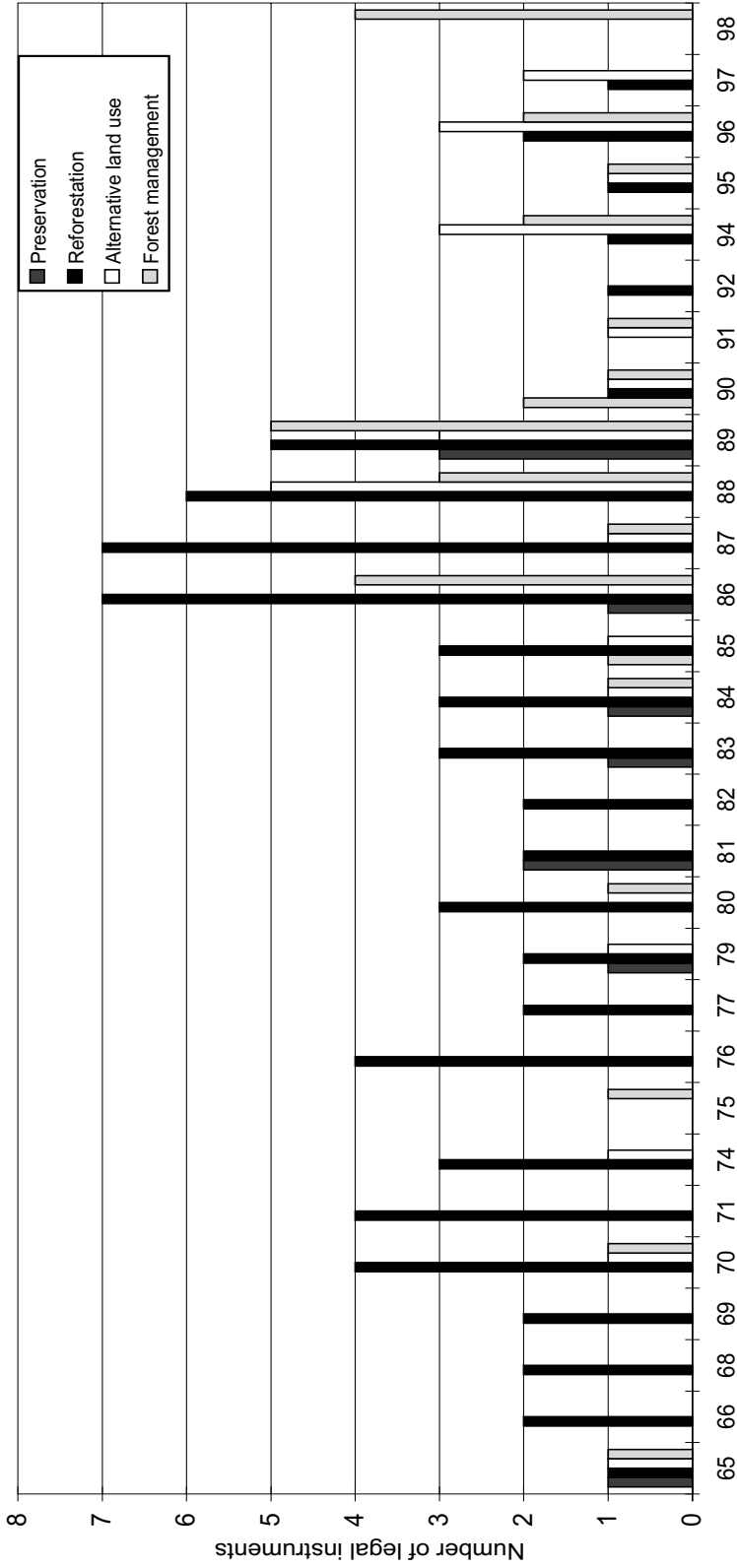
In 1965 the Forestry Code established that native forests could only be exploited by technical plans for forest management.⁴⁵ But the Brazilian government has responded very slowly to the cause of forest management, taking 29 years to activate this legal provision. Meanwhile, forest management issues were handled through administrative acts without the compelling power of administrative decrees and normative legislation.⁴⁶

Until the mid-1980s, little legislation regulated alternative land use and forest management. Between 1965 and 1985, only an average of 3.1 legal instruments per year were established, most of them related to economic development from forest-based industries. As a result of unplanned economic development in the 1970s, pressure on tropical forests in the Amazon started to accelerate. This pressure increased dramatically in the 1980s when the depletion of forests in the south and southeast regions of Brazil became almost total in the states of Paraná, São Paulo and Minas Gerais. Moreover, the expansion of the road system to accommodate growth in agriculture and cattle ranching throughout the northern region—particularly in the state of Pará—further aggravated the depletion of the Amazon forest. In addition, fiscal and financial incentive policies in operation at that time contributed pressure on the Amazon region. By 1988, the Amazon was responsible for 54% of national wood-log production (Barros and Verissimo 1996:49). Therefore, during the second half of the 1980s, demand for better land use regulation increased and included both alternative land use and forest management. The number of legal instruments also increased, reaching an average of 10 per year and peaking in 1989, when 15 legal instruments were established in one year (Figure 6).

In response, the federal government established more rigid regulations for forestland use. They eliminated fiscal incentive mechanisms for the establishment of forest-based industries in 1988.⁴⁷ In 1989, they created requirements for the registration of legal reserve areas by notary public⁴⁸ and temporarily suspended fiscal incentives and credit lines for agriculture and cattle ranching.⁴⁹ In 1996, the government instituted a major change in one of the most visible forest protection laws. Until that time, the Forestry Code permitted landowners to deforest 50% of their land; they were required to leave the other half in forest.⁵⁰ But the 1996 Provisional Measure reduced allowable deforestation to just 20%, in the hope of limiting further forest loss.⁵¹

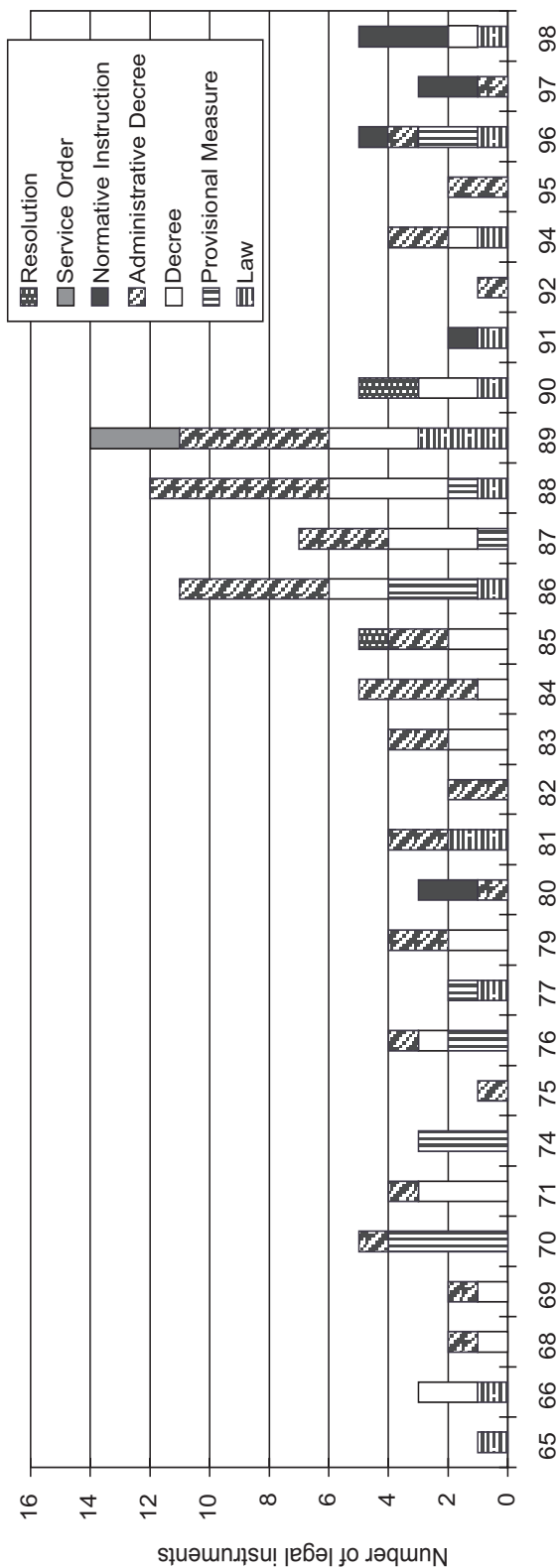
As the data show, the number of legal instruments regulating forest management started to increase in 1985. However, nearly a decade more would pass before the first executive decree to regulate the Forestry Code provision concerning native forest management was finally established in 1994.⁵²

Figure 5. Establishment of legal instruments to govern various forest land use patterns (1965-1998)



Source: Elaborated from a collection of forest legislation.

Figure 6. Evolution of forest land use legislation by type of legal instruments (1965-1998)



Source: Elaborated from a collection of forest legislation.

B. The Enforcement System

1. Forest Control Administration

In 1981, the National Environmental Policy Law devised the National Environmental Management System (SISNAMA) to implement environmental policies. SISNAMA maintains agencies at federal, state, and municipal levels.⁵³ At the federal level, three lines of authority operate: (1) Superior Unit—the government council to advise the president on national environmental policy and governmental directives; (2) Advisory Unit—the National Council for the Environment (CONAMA) to plan, coordinate, and supervise national environmental policy, and to advise the government council; and (3) Implementing Unit—the Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA).⁵⁴ The Ministry of the Environment (Ministério do Meio Ambiente, or MMA), established in 1992, is responsible for the overall planning, coordination, and implementation of national environmental policies, including the definition of general forest policy.⁵⁵ Created in 1989, IBAMA is the major institution directly responsible for forest administration, implementation, and enforcement of forest laws.⁵⁶ IBAMA is an amalgamation of the major federal executive agencies that deal with natural resources.⁵⁷ According to Decree N° 97.946/89, Article 1, IBAMA's role related to forestry includes: 'registration, licensing, enforcing and regulating the sectors that utilize raw materials coming from natural resources (XI), as well as regulating the utilization of these resources and products or subproducts resulting from the exploitation (XIII).' Although forest policy implementation falls primarily under the federal government's responsibility, state governmental agencies may also become involved in control of forest management plans, due to new constitutional provisions (Hummel 1995a:135,138).

a) Decentralization of administrative organization

Until the advent of the new Brazilian Constitution in 1988, overall environmental policy, including forest policy, was administered exclusively by the federal government. However, the new Constitution delegated some powers to state and local governments in an attempt to decentralize administrative responsibilities.⁵⁸ Almost immediately, states and municipalities responded to this initiative by creating environmental councils based on respective state constitutions and municipal laws (Ribas 1991:31).

Although IBAMA was formed in 1989—following the new Constitution with its emphasis on decentralization—it adopted a centralized administration model like the federal government before it. At first, IBAMA's priority was to plan policies and handle governmental subsidies, functions which require a strong centralized structure.⁵⁹ Since these two jobs are no longer the main responsibilities of IBAMA, the agency has strived to decentralize its administrative organization. But despite 10 years of restructuring to achieve decentralization at the state and municipal levels, IBAMA has not yet finished instituting a more efficient administration of natural resources (IBAMA 1997a; SBS 1995:8).

At the same time, forest control still falls under the centralized responsibility of the federal government. Organizations seeking permits to log or clearcut in the Amazon must obtain them from the federal forestry control agencies. But some states⁶⁰ have initiated processes to control logging within their forests, as a result of the new

constitutional provisions (Hummel 1995a). Yet, municipalities have taken very little or no responsibility for the implementation of forest policy, including enforcement (Ribas 1991:33).

At least in terms of forest control, local governments could potentially have highly efficient results, due to their proximity to the regions where problems arise (Ribas 1991:31). State and municipal councils could play a much more important role in forestry development, especially in forest control, promotion of forest extension services, and the restoration of degraded forests (Ribas 1991:32).

2. Current Forest Control

This section discusses current forest control with a focus on forest management. The Brazilian Institute of the Environment and Renewable Natural Resources—IBAMA—has implemented forest control through various instruments. These include forest management plans, logging permits, forest control and timber transport processes, and forest field audits. Although forest concessions on public lands are part of forest management in the Amazon, it is appropriate to focus on forest control and management in private forests since that is where logging through forest management has traditionally taken place.

a) Forest Management Plans

A forest management plan is a tool to guide foresters or forest managers in conducting good forestry practices. Properly applied, forest management plans limit the intensity of logging and prevent long-term damage to the forest structure. So when logging is properly conducted, it does not exceed regeneration capacity, and the forest can serve environmental needs and yield forest products sustainably (Yared and Souza 1993:33). With such goals in mind, the Brazilian government began to require a forest management plan as an essential element in procuring logging permits in 1986.⁶¹ However, even today, a forest management plan does not necessarily lead to sustainable timber production; rather, it is merely used to meet the legal requirements for obtaining a logging permit (Silva 1997:vi).

A major report produced by the Brazilian Institute of Agriculture and Research (EMBRAPA) discloses the low level of actual implementation of forest management plans in the Amazon.⁶² The research reveals that current forest management practices do not produce sustainability, and that compliance with legal requirements is largely a bureaucratic façade. The report goes on to indicate several weak points in the implementation of forest management plans in the field. First, the legal requirement for silvicultural treatment is seldom followed. Or, when some attempt is made to implement the plan, it often is not followed properly. For example, in certain cases, pruning ivy was limited to a range only 20 or 30 m deep along roads, in an apparent effort to deceive inspectors (Silva 1997:10). In addition, logs with diameters⁶³ smaller than that authorized by law were frequently found in timber stockyards (Silva 1997:11). Second, the annual consumption of timber by those logging companies registered with IBAMA generally does not equate with the size of the areas supposed to be managed.⁶⁴ Third, a strong tendency to grossly overestimate the yield volume of commercial timber dominates the logging industry.⁶⁵ Fourth, no forest management plan on record presents prospecting inventories for the timber species to be harvested.

This is true even though prospecting inventories could serve to map tree harvesting, and that is a core tenet of any forest management in the tropics.⁶⁶ Still other requirements for proper forest harvesting practices are largely ignored. Timber companies typically do not lay out skid trails; planned felling directions were carried out in only 30% of projects, and no subsequent forest regeneration monitoring has been done by logging entrepreneurs.⁶⁷ This report clearly reveals that no forest management project has been fully implemented in the field, since the government has failed to inspect and enforce these plans (Silva 1997:11). In general, common forest management plans in Brazil are further limited by their exclusive concern with sustainable timber production, rather than ever taking into consideration any ecological aspects of the forests (World Bank 1994:276). Obviously, forest management in Brazil is far from satisfactory.

The failure to implement sustainable forest management practices in the Amazon results from the lack of serious ethical behaviour on the part of the forest engineers who create forest management plans, as well as the lack of effective forest control by public agencies. At this point, the role of forest engineers is the focus of this discussion, while the lack of effective forest control is a matter taken up in later sections. Forest engineers are hired by timber companies to prepare forest management plans. Often these engineers have been criticized as the persons responsible for the unsuccessful implementation of forest management—that they do not perform their duties according to the rules (Filho 1997:52). On the other hand, forest engineers claim that the current educational system in forest management does not offer adequate discipline to meet the increasing demands of the forest industry (Filho 1997:50). In addition, Brazil lacks properly trained forest engineers to implement the technical forest management standards that are required by forest law (Filho 1997:50). Certainly, improvements in these two areas would significantly impact sustainable forest management. Nevertheless, forest engineers are hired by forest owners or timber companies; naturally, they are likely to draft forest management plans that benefit their employers, rather than lead to the sustainability of forests. The real problem rests in the fact that no legal measures are in place to punish forest engineers for wrongful or fraudulent acts. The lack of legal consequences has perpetuated the continued preparation of sloppy forest management plans. Quite possibly, the institution of punishments for shoddy forestry engineering would reduce irresponsible acts on the part of those responsible for drafting forest management plans.

b) Types of Logging Permits

The Forestry Code is supposed to protect forests. In truth, it almost comes closer to favouring the destruction of forests. Although it aims to prevent or minimize the negative impact of forest use, current forest legislation⁶⁸ actually sets forth legal requirements for forest exploitation through logging. Central to this problem is the legal process of procuring logging permits. According to the new administrative act, the 'Instrução Normativa' N° 7 of 1999, logging permits are divided into two types: those requiring native forest management and those that allow clearcutting.⁶⁹ Despite its intention to make forest management easier, this new administrative act has been very difficult to implement since forest management has more legal requirements than clearcutting. Yes, clearcutting is restricted to 20% to 80% of a parcel of land (depending on the total size and type of vegetation located there). Yet forest

management requires planning to reduce the impact of logging and the institution of measures to promote regeneration. Its only attraction is that it can be conducted in legal reserves while clearcutting cannot (See Table 4).

(1) Logging permits for forest management

Based upon technical requirements and restrictions of forest resources, two major types of logging permits are available for parties interested in forest management: (i) large-scale management, and (ii) simplified management. A large-scale forest management plan would contain a description of the proposed logging operation for the whole area, the establishment of a cutting cycle, and measurements for forest regeneration after logging. A simplified forest management plan does not require such details. It simply limits harvesting to 5 trees per ha, while large-scale management volume is based on the productivity of each area, and might or might not exceed 5 trees per ha (Table 4). Large-scale forest management is subject to more stringent forest controls than simplified management. For instance, large-scale management requires pre-logging inspections and follow-up field inspections, while simplified management only requires pre-logging inspections.

Large-scale forest management may be applied to any size and type of property. In contrast, simplified management is restricted by conditions regarding land tenure and type of property. It may be applied on private properties smaller than 500 ha or in collective areas formed through associations of landowners or legitimate landholders up to a total of 500 ha. Such collective areas are typically composed of individual smaller areas, each of which should be managed annually.

(2) Logging permits for clearcutting

Clearcutting permits are issued based upon the size of a property and the type of land tenure (Table 4). In properties up to 100 ha, the maximum allowed clearcutting area is 3 ha per year.⁷⁰ In collectively owned extractive areas with a total area larger than 100 ha, the maximum allowed clearcutting area is 5 ha per year.⁷¹ In areas from 100 to 200 ha, the maximum allowed clearcutting area is 20% of the total property.⁷² However, for clearcutting in properties over 200 ha, there is no annual cutting limit.⁷³

The new administrative act IN 7 set forth some innovative guidelines. First, it established a maximum area in which annual clearcutting would be allowed.⁷⁴ Second, it introduced a measure against cattle ranching, and insists that clearcutting in extractive areas will only be allowed in cases where the area will be used for family agriculture rather than large-scale farming or cattle ranching.⁷⁵ Third, clearcutting permits are only granted for properties where areas already cleared have been productive in accordance with suitable land use guidelines.⁷⁶

It should be noted that during the same timeframe when more stringent land use restrictions came into effect, the number of required field inspections to grant logging permits was reduced. Clearcutting in areas less than 200 ha is not subject to any field inspection, and the logging permit for those areas is granted by means of a simplified process requiring little more than a declaration of timber stock on the property.⁷⁷

Clearcutting in areas greater than 1000 ha does require a special license from the appropriate state environmental agency (Órgãos Estaduais de Meio Ambiente, or OEMAs). This means that the logging company must present an Environmental Impact Assessment (EIA) and an Environmental Impact Assessment Report (EIAR). However,

Table 4. Legal requirements and limitations of logging permits in the Amazon

Legal requirements	Types of logging permit					
	Forest management			Clear cutting permit		
	Large-scale Any size of property	Simplified Community area < 500 ha/year	Simplified private area < 500 ha	< 100ha	100ha-< 200 ha	> 200 ha
Technical project	Complete management (a)	Simplified management	Simplified management	Simple requirement	Simple requirement	Logging operation plan
Annual operation plan	X	X	X			
Harvest limitation	Local productivity rate	Extract 5 trees/ha	Extract 5 trees/ha	Maximum 3 ha/year	20% of total area	Maximum 5 ha/year
Environmental impact assessment (EIA)	(b)					Property >1000 ha (c)
Legal reserve	Logging allowed	Logging allowed	Logging allowed	20 - 50%	20 - 50%	20 - 50% (d)
Keep a permanent preservation area	X	X	X	X	X	X
Inventory of 100% of tree species to be harvested	X	X	X			
Prior-logging field inspection	X	X	X			X
Follow-up field inspection	X					
Procurement of log transport permit-ATPF (e)	X	X	X	X	X	X

Source: Based on Decree 1.282/94; Portaria 48/95; Decree 2.788/98; Instrução Normativa No. 5/98; No.6/98 and No. 7/99.

(a) A complete forest management project includes the establishment of cutting cycle and measurements of forest regeneration after logging.

(b) EIA is not required for forest management as defined by CONAMA. However, it is necessary to describe any negative impacts that may cause and remedial measures, which are included in the forest management plan.

(c) State Environment agencies may require EIA for activities in smaller areas with high potential impacts. For example, intensive use of toxic substances.

(d) In savanna areas, the legal reserve area should be only 20% of the property (Medida Provisoria 1.885-38, of 6/29/1999).

(e) It refers to 50% of the property. However, the clear cutting area cannot be over 20% of the property (Medida Provisoria 1.885-38, of 6/29/1999).

(f) The Forest Product Transport Authorization (ATPF) is used by IBAMA to control the origin of timber and harvested volumes.

state environmental agencies have autonomy on whether to require an EIA/EIAR for smaller properties, even when land use activity will have a potentially negative impact on the environment, such as through intensive use of toxic substances.

Administrative act IN 7 also set maximum periods for granting permits to start logging operations; namely, 30 days for properties smaller than 200 ha and 60 days for properties larger than 200 ha. For natural forests, this act also set the maximum area for clearcutting at 50% in properties smaller than 200 ha, and 20% in properties larger than 200 ha.

(3) *Newer legislation versus actual practice*

The recent legislation attempts to facilitate forest management rather than clearcutting. Nevertheless, the clearcutting option continues to look more attractive than forest management, principally in properties smaller than 100 ha. In general, clearcutting permits may be obtained more readily than permits for forest management because they rarely require inspection and involve only a short waiting period.

For small properties, clearcutting permits require no field inspections, yet forest management permits require pre-logging inspections for all levels, as well as follow-up inspections for large-scale programs. That means timber companies must negotiate more bureaucracy before they can actually proceed with a logging plan. This bureaucracy itself ultimately acts to deter the procurement of forest management permits. Furthermore, because no field inspection and no on-site monitoring is required for clearcutting, timber can easily be extracted from areas not officially authorized by permit (Barreto and Hirakuri 1999:7). So, timber transport permits associated with clearcutting operations are simpler to obtain and are more prone to corruption because they can easily be used to justify the extraction of timber from unknown sources.

In addition, the government tends to issue clearcutting permits quickly because the law establishes a maximum period for the completion of paperwork (30 days for properties smaller than 100 ha and collectively owned extractive areas).⁷⁸ Conversely, no definite time limit is set for the paperwork to procure forest management permits. A survey—conducted in 1997 in the regional IBAMA Superintendency of Pará state—showed that the average time to approve a forest management project of 1500 ha was about 170 days (Barreto and Hirakuri 1999:14).⁷⁹ Obviously, the lack of a time limit discourages interest in forest management not only because the logging company must wait to receive a permit, but also because the additional time produces economic disadvantage for the loggers. The Amazon region experiences distinct seasonal fluctuations between the rainy and dry seasons, and rain interferes with harvesting timber. Especially for logging activity in the uplands (*terra firme*), harvesting is possible only during the dry season. Hence, it is crucial that forest management permits be issued prior to the dry season of any given year. If not, the waiting period is extremely detrimental for forest management and encourages clearcutting.

Fortunately, the waiting period for forest management project approval may soon be reduced. Pursuant to Normative Instruction N° 5 of 1998, 'the Technical Chambers will set forth a calendar establishing a period for the petition, analysis and field inspections of forest management plans, and for issuing annual logging operation authorizations.' However, a timber company manager on the working group commission for forest legislation⁸⁰ has said that the procurement of clearcutting permits will continue to be more attractive until such time as Normative Instruction N° 5 is fully implemented (Barreto and Hirakuri 1999:7).

c) Forest Control and Timber Transport

IBAMA has designed a system that will control logging operations, timber transport, and processing. First, the general forest control process through which logging is managed in large-scale operations will be analysed; then, the differences between simplified forest management and clearcutting permits will be examined.

This analysis finds that enforcement problems for sustainable management are due to three main factors. They are: (1) deficient legal structure, (2) lack of human resources, and (3) lack of sufficient financial resources. In many instances, these problems are so intrinsically linked to one another that it is difficult to examine each issue separately. Moreover, within a context of sustainable forest management, logging is regulated through complex administrative procedures which make enforcement difficult in all three areas.

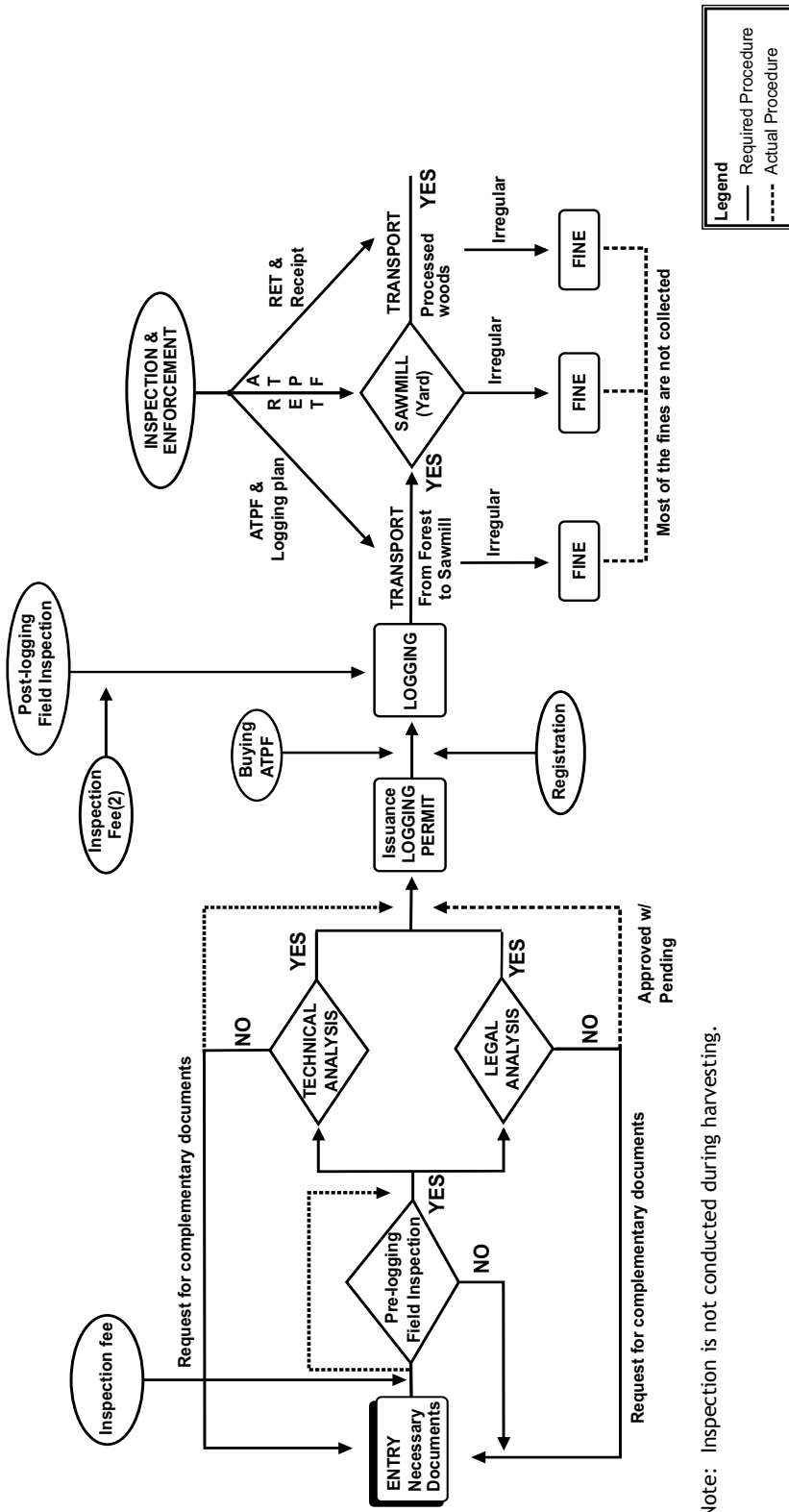
(1) Control processes for large-scale forest management

To understand how enforcement problems occur, this section examines the tangled administrative procedures within the enforcement system. The general procedure is illustrated in Figure 7, and includes phases for the collection of documentation, payment of fees, inspections and decision making. One reason for the intricate administrative procedures is that the logging permit process involves multiple governmental divisions and many bureaucrats.

Six clear phases can be identified: registration, technical analysis, legal analysis, field inspection, permit issuance, and formal registration. The process begins when the logger initially registers the forest management project with IBAMA. Then, technical analysis and legal analysis are conducted during the same phase but by different governmental divisions. Technical analysis focuses on the feasibility of the project, while legal analysis checks the accuracy of documentation. If both these analyses produce satisfactory results, then the pre-logging field inspection is conducted. After that, a logging permit will be issued, given that the inspection results in a satisfactory grade for the project. Once the logging permit is in place, forest management projects are formally catalogued and officially registered with IBAMA. When technical or legal documentation is incomplete or inadequate, the projects must be suspended until gaps are filled in. However, as a priority, IBAMA verifies proof of land title or proper land tenure, and thus satisfies the primary legal requirement. That done, the process follows the normal course of action and a logging permit is issued with the condition that the logger must submit any outstanding documentation. After obtaining the permit to log, the logger must request authorization for forest product transport (*Autorização de Transporte de Produtos Florestais*, or ATPF). The ATPF then becomes the document used to show the source of timber. This document must accompany the transportation of all logs from the forest to the sawmill.

This secondary process for obtaining the ATPF proceeds through five divisions and sectors: registration; control and inspection (Divisão de Controle e Fiscalização, or DICOF); technical oversight (Divisão Técnica, or DITEC); fee collection; and permit issuance. Moreover, sawmills are under the control of DICOF. Yet, the control of timber volume from forest management plans is the responsibility of DITEC. Once DITEC releases timber volume credit, the ATPF process is passed along to the fee collection sector in order to determine whether the sawmill has outstanding fees or bills with IBAMA. If no debt is discovered, the ATPF is finally sent for authorization from the issuing agency.

Figure 7. Required and actual logging permit procurement process, inspection and enforcement actions in Brazil



Note: Inspection is not conducted during harvesting.

After the first year of logging, the timber company presents a logging report to IBAMA, along with the logging plan for year two. In turn, IBAMA conducts a follow-up inspection to verify compliance with the forest management plan. Given satisfactory results, IBAMA inspects the next plot to be logged and authorizes continued timbering. If IBAMA discovers irregularities, further logging under the operative plan is prohibited.

It should be noted that a process exists to revalidate or extend forest management plans. Revalidation occurs when, for some reason, the timber company could not carry out its forest management plan during that year. In such a case, the logger requests revalidation, and it is granted as long as an adequate log consumption credit exists. In any case, DITEC authorizes revalidation only for the next consecutive year.

(2) Control processes for simplified forest management and authorized clearcutting

As mentioned above in the discussion of forest management plans, the control of simplified forest management and clearcutting on small properties is less restrictive than the control of large-scale forest management projects. Simplified forest management projects require only pre-logging field inspections, while small-scale clearcutting is not subject to any inspection at all. Limiting field inspection of small properties raises the question, even within the forestry sector, that issuing clearcutting permits amounts to legalizing indiscriminate logging because no one ever verifies that only the authorized area is timbered (Barreto and Hirkuri 1999:10). In contrast, clearcutting on properties larger than 1000 ha requires field inspections both before and after clearcutting. And, in fact, since the 1994 establishment of this EIA requirement for inspections in areas larger than 1000 ha, no clearcutting permit has been requested by any timber company.⁸¹

(3) Control of timber sources

The division of control and inspection (DICO) conducts inspections of wood product transport according to three phases. First, the inspector checks the transport permit or ATPF during the movement of logs between the forest and sawmill. This inspection occurs at established checkpoints or mobile checkpoints along rivers and roads. Second, inspectors visit sawmills to verify ATPFs and the special stamp known as RET or Special Transport Regime (*Regime Especial de Transporte*). The RET validates that a particular forest product has been produced and transported in accordance with the required permits. Third, inspectors check the receipts and the RET stamp of all sawn wood being transported. When the logger cannot present the documentation required by law or omits necessary information, the inspector levies fines according to the seriousness of the infraction. During any of these inspections, the inspector may trace the wood back to the area where it was supposed to originate (Barreto and Hirkuri 1999:11).

(4) Loopholes in the process of obtaining permits

A governmental review has detected many of the irregularities described in the previous section, but it drew no conclusions about why they happened. In an effort to understand the reason behind these irregularities, I examined a total of 31 forest management plan projects in Pará state in 1995 and 1996.⁸² The following discussion reveals the loopholes in the logging control process.

As previously mentioned, the logging control process is complicated and time consuming; it involves many phases and various governmental agencies. Together, these factors allow for considerable deviation from the regular course of the process.

The logging permit procedure for forest management plans takes an average of five and a half months between the time the project is registered and the permit is issued. The average period for technical approval is four months, and for legal analysis two and a half months. In addition, the handling time for documents to be transferred among divisions is often considerable. For instance, it takes an average of 18 days to move a case from POCOF (the regional control and inspection office) to SUPES (the state superintendency). Once at SUPES, handling averages 8 days between the registration division and DITEC; from DITEC to DIAJUR (the legal division), it requires 25 days (Table 5). Each phase of the process supposedly requires a satisfactory grade before the case can continue. Nonetheless, the evidence strongly indicates that agencies do not always adhere strictly to this rule (Table 6).

Table 5. Median times for paperwork processing during the procurement of logging permits

Division	Number of SFMP considered	Median (days)
• POCOF-SUPES	15	29
• Registry-DITEC	31	7
• Technical Analysis (DITEC)	22	121
• DITEC-DIAJUR	11	24
• Legal Analysis (DIAJUR)	31	85
• Protocolo - Logging permit issuance (Head office)	31	170

Source: Elaborated from forest management plans registered at IBAMA/SUPES/PA between 1995 and 1996.

SFMP-Sustainable Forest Management Plan POCOF-Control and Inspection Regional Office
 SUPES-Superintendency of Para State DITEC-Technical Division
 DIAJUR-Legal Division Head Office- Superintendent's Office

Notes:

1. I examined a total of 31 plans, taking into consideration the date of receipt and 'send off' by each division. However, in three analyses the median was calculated based on the number of plans with accurate information concerning dates.
2. The shortest time taken to approve a plan was 25 days.
3. The longest time taken to approve a plan was 662 days.

Table 6. Loopholes in the logging control process (State of Pará)

Loopholes	Number of SFMP	% of total # of SFMP
• Pre field inspection before legal analysis	23	74%
• Issuance of logging permit with pending documentation	7	23%
• Pre field inspection and registration conducted on the same day	4	13%
• Pre field inspection before the registration	3	10%
• Pre field inspection and legal analysis conducted on the same day	1	3%
• Pre field inspection and logging permit issuance done on the same day	1	3%
<i>Total SFMP examined</i>	<i>31</i>	<i>100%</i>

Source: Elaborated from sustainable forest management plans registered at IBAMA/SUPES/PA between 1995 and 1996. Note: The dates of receipt or 'send off' by each division were taken into consideration.

In fact, the data reveals that—in 74% of the forest management plans examined—the pre-logging field inspection was conducted prior to legal analysis; 23% of these cases were approved with documentation still pending; and in 13% of the cases, registration and pre-logging inspections were carried out on the same day. Among these projects, three extreme cases bear further consideration. In the first two cases, pre-logging inspection was done before the project was formally registered. That means these projects did not technically exist at the time they were inspected. In the third case, two stages of the process happened on the very same day. Either technical evaluation and pre-inspection coincided or pre-inspection and the issuance of permits did.⁸³ Considering the average time taken to conduct the technical evaluation and to transfer documentation from one division to another, it is difficult to conceive that two stages of the process could happen on the same day. In the case where the pre-inspection is conducted in the field at the same time as the permit is being issued by the main office, it is particularly difficult to see how the regulations apply. Instead, it should take at least one day for the case to reach the main office.

Furthermore, the evidence shows that at least three projects were ‘forgotten’ at POCOF without being forwarded to SUPES for approximately five months. In these cases, there is no apparent reason to excuse the delay. In fact, these three projects were all registered on the same day and their processing also occurred on exactly the same dates, except for the legal analysis.⁸⁴ In another case, this time for project revalidation, the permit extension was issued without verifying whether the pending elements from the first year’s plan had been achieved. In this case, follow-up inspection was not completed until after two years of logging. As a result, the government suspended this project due to pending technical issues such as lack of compliance with required silvicultural treatment, lack of permanent parcel, and inconsistencies in marking mother trees.⁸⁵

Moreover, there is a great deal of miscommunication among the divisions responsible for forestry management. For instance, in one case where DIAJUR ordered suspension because of failure to comply with technical requirements, the DITEC still issued a logging permit.⁸⁶ Such miscommunication is a prime example of deficiencies in interagency coordination, and that subject is taken up in the section on institutional problems.

Hummel (1995b) criticizes procedures for logging control and obtaining permits because ‘the control is based on the strategy of issuing and receiving papers that are of little, if any, use. And field monitoring is left to the second plan.’ This study shows various cases in which the normal course of control processes were not followed, in which pertinent documentation or information was completely omitted, and still other cases which should have resulted in suspension because of noncompliance. But in none of these cases did the government follow its own rules, and the projects received authorization. Essentially, then, the present administrative procedure for forest management is mere formality.

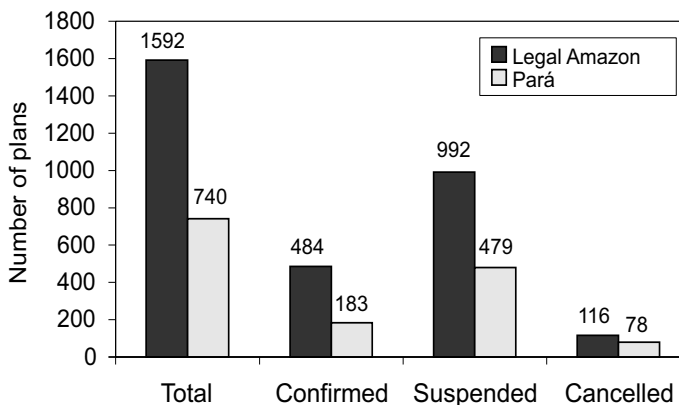
3. Compliance

As a matter of fact, full compliance almost never happens. There are many causes for this problem, including an inadequate forest extension service, labour force, general corruption, deficient legal structures, and various institutional problems that will be discussed later. In 1996, even the federal government recognized that it had not properly implemented sustainable forest management law. So, the public agency

in charge of forestry, IBAMA, decided to evaluate all forest management plans registered in the Amazon area between 1977 and 1996.

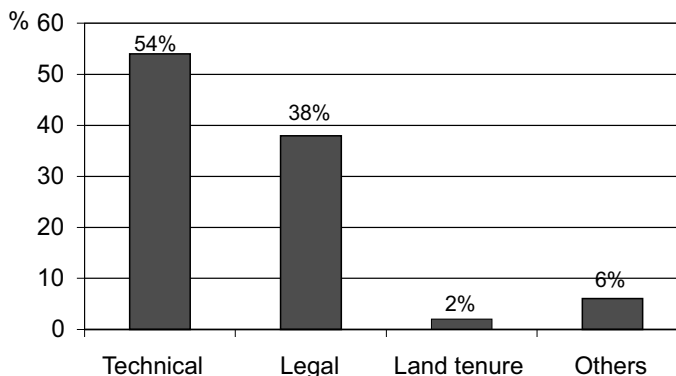
To that end, IBAMA reviewed forest management plans in 1996. Their results indicate that 70% of the 1592 plans reviewed had irregularities during the initial phase of the review. IBAMA focused their evaluation on the technical and pending legal issues of documents in process by 1996. Then, IBAMA went on to consider suspended plans by conducting field inspections of those suspended plans. The first phase of the review resulted in the full cancellation of 116 plans (7%) and suspension of 992 plans (63%) throughout the Legal Amazon region. More narrowly, in the state of Pará, the results were similar to those in the Legal Amazon as a whole; out of a total of 740, 557 (72%) had irregularities, and IBAMA cancelled 78 plans (10%) and suspended 479 (64%) (Figure 8). In the overall study of the Amazon region, reasons for cancellation or suspension break down into two major areas: technical (54%) and legal (38%), with a very small set of land ownership-related problems (2%) left over (Figure 9).

Figure 8. Total SFMP compared to disposition of plans following 1996 IBAMA screening



Source: IBAMA

Figure 9. Reasons for cancellation and suspension of forest management plans in the Legal Amazon



Source: IBAMA- Avaliação dos Planos de Manejo Florestal da Amazônia

4. Field Auditing of Forest Management Plans

The 1996 forest field audit conducted by IBAMA represents a first step toward stricter enforcement of forest management plans in the Amazon. This study focuses on the state of Pará because that is the location of the majority of forest management plans that currently affect logging in the Amazon. In Pará, IBAMA has sometimes cancelled or suspended plans for more than two reasons. Many times, the causes for cancellation also overlap with the reason at the same time for suspension of some projects.

The primary reason for cancellation was that the project had stopped for more than 5 years without technical justification. Fifty of the 71 cancelled projects were stopped for the sole reason that the trees had been already cut down and no valuable trees stood on the site any longer. The next most common reason for cancellation was the failure to properly register the managed area with a notary public.⁸⁷ Other projects had been cancelled because of technical reasons such as the lack of a responsible technician, the failure to present pre- and post-logging or technical reports, and the lack of continuous forest inventory or inventory with an insufficient number of permanent parcels (Table 7).

Table 7. Reasons for cancellation of Pará State's forest management plans in 1996

Reasons	N° of plans	% of total plans
1. SFMP stopped for more than 5 years without technical justification	71	91%
2. Lack of proper registration with Notary Public	14	18%
3. Lack of responsible technicians	13	17%
4. Lack of pre- & post-exploitation reports	12	15%
5. Lack of continuous forest inventory or inventory with an insufficient number of permanent parcels	10	13%
<i>Total cancelled plans</i>	78	100%

Source: Relação de todos os planos de Manejo por Protocolo. Unidade: SUPES/PA. IBAMA/October/1996.

Note: SFMP-Sustainable Forest Management Plans.

When it comes to suspension of projects, the most common reason was failure to register the managed area with the notary public. And, like the reasons for cancellation, other causes for IBAMA to suspend projects were often technical. Again, many projects failed to present pre- and post-logging or technical reports; they lacked adequate forest inventory data or responsible technicians (Table 8). Out of 472 suspended plans, only 173 (36.6%) were interrupted because of a single reason, while 63.4% had two or more causes for suspension. Some (8.3%) even presented more than four reasons. On top of that, 106 plans (22.4%) had simply been approved illegally, and that was the justification for suspension.

According to IBAMA, various reasons contribute to ineffective field inspections. They cite the lack of qualified personnel, low salaries for inspectors, and insufficient budget allocations (Gadelha and Silva 1997:36). The IBAMA study points to other

Table 8. Reasons for 1996 suspension of Para State forest management plans

Reasons	N° of plans	% of total plans
1. Lack of proper registration with Notary Public	236	50%
2. Lack of pre- & post-exploitation reports	216	46%
3. Lack of responsible technicians	181	38%
4. Lack of continuous forest inventory or inventory with an insufficient number of permanent parcels	178	38%
5. Approved illegally	106	22%
<i>Total suspended plans</i>	472	100%

Source: Relação de todos os planos de Manejo por Protocolo. Unidade: SUPES/PA. IBAMA/October/1996.

problems that should have been detected in the documentation analysis phase, and strongly indicates the aggravating circumstance that most of these plans had been granted permits even though they had an average of three concomitant reasons for suspension. IBAMA also recognizes that some causes for the suspension of projects were actually sufficient grounds for cancellation. However, IBAMA ultimately decided first to suspend these projects and to automatically cancel them if pending issues were not resolved within 60 days (IBAMA/MMA 1997:8).

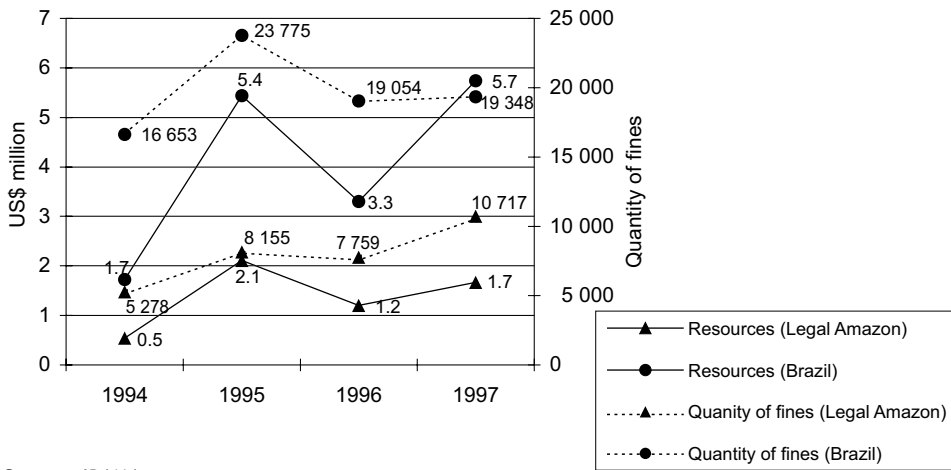
5. Sanctions for Violations of Forest Legislation

Brazilian law considers forest violation as an administrative infraction, and regulates it through the Environmental Crimes Law (Law N° 9.605/98) enacted in 1998. This law establishes sanctions and an array of penalties that range from warnings to prison terms.⁸⁸ However, the section of this law that deals with administrative infractions has not yet been regulated. Until such regulation occurs, sanctions established under the National Environmental Policy Law (Law N° 6.938/81) prevail. In that law, forestry violations fall under the sanctions applied generally for any environmental infraction. Penalties pursuant to Law N° 6.938/81 are: (1) fines; (2) loss or restriction of incentives and fiscal benefits granted by public authorities; (3) loss or suspension of participation in lines of credit at official credit establishments; and (4) suspension of activities.⁸⁹ Of course, fines are the most common penalties applied for forest-related infractions. So, this study focuses on fines to examine how well the current system of sanctions works.

a) Change in the number of detected infractions

Between 1994 and 1997, the federal government tried to improve its control of forest management. It did so through the allocation of financial resources for inspections and an increase in the number of fines levied for infractions. By 1997, the resources allocated for inspections were quadruple those for 1994 (Figure 10). And in an effort to improve the collection of fines, the government allowed an automatic reduction of 30% when the violator made timely payment in full.⁹⁰

Figure 10. Resources for the enforcement of environmental infractions and the quantity of levied fines in the Legal Amazon and Brazil during 1994 to 1997



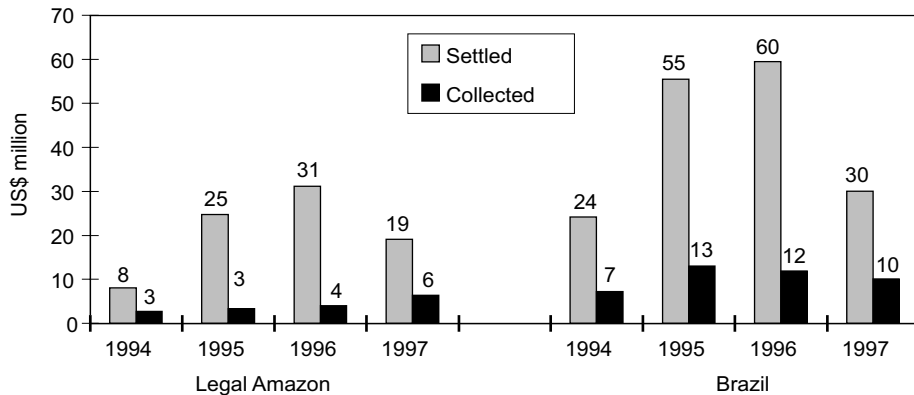
Source: IBAMA

Clearly, the investment in inspections paid off by increasing the number and total amount of fines. Starting in 1994, the total amount of settled fines increased, and peaked in 1996 at US\$60 million. This figure adds up to almost three times the figure for 1994. In 1997, the government experienced a drastic decrease of 45% in settled fines, amounting to a total of US\$30 million. This is true despite the fact that the quantity of total fines in Brazil actually grew slightly from 1996 to 1997. In the Legal Amazon region, the amount of settled fines decreased from US\$31 million to US\$19 million during that same one-year period. Again, that took place even though the number of fines increased (Figure 11). Regardless, however, of the total volume of fines levied between 1994 and 1997, collection remained low throughout this period. The next section will consider the causes for the decrease in the amount of fines and low collection rates. Even so, the total amount of collected fines in relation to the financial resources allocated for inspection is very high. Between 1994 and 1997, in all of Brazil the average ratio of collected fines in relation to inspections costs was 2.9 to 1, and in the Legal Amazon it was slightly higher than the total for Brazil, reaching a ratio of 3.4 to 1 (Figure 12).

b) Low rates of collection and decreases in the amount of fines

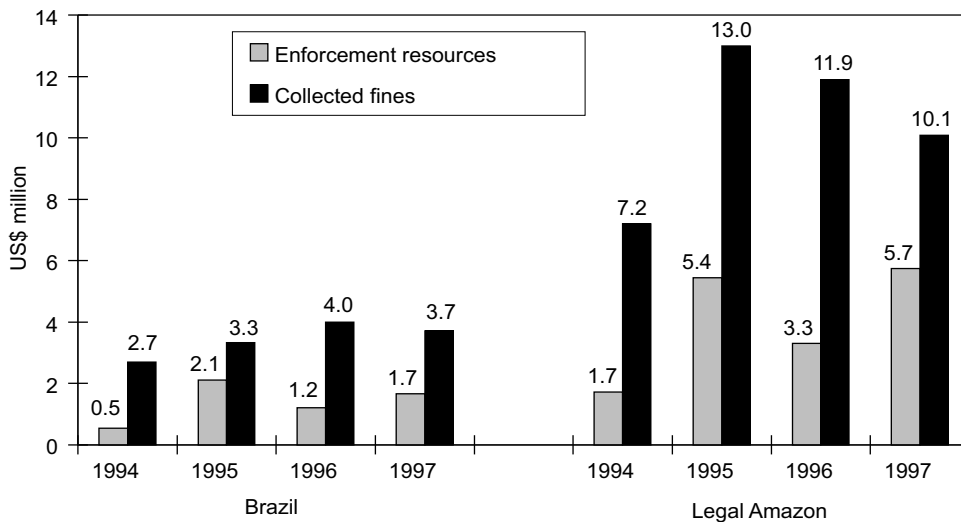
One indicator of effectiveness in the forest management control system is the practical application of fines for legal violations. The low percentage of environmental fines collected in all of Brazil and in the Legal Amazon shows how generally weak this control system is. For example, the Brazilian government collected only 27% of the total amount of levied fines for the period between 1994 and 1997, and the maximum rate of collection was logged in 1997 at 34%. Similarly, in the Legal Amazon the average collection rate for this period was even lower, at 20% (Figure 13). As an example of value for 1997, the collection rate yielded US\$10 million out of a possible US\$30 million in all of Brazil; in the Legal Amazon, the yield was US\$6 million out of a possible US\$19 million (Figure 11).

Figure 11. Amounts of levied and collected fines compared in the Legal Amazon and Brazil from 1994 to 1997



Source: Elaborated from IBAMA data.

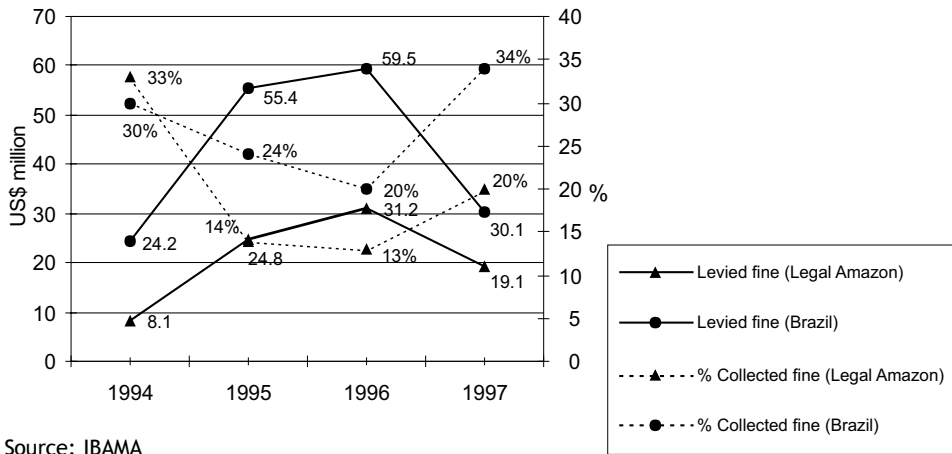
Figure 12. Resources for the enforcement of environmental resources and the amount of collected fines in the Legal Amazon and Brazil during 1994 to 1997



Source: Elaborated from IBAMA data.

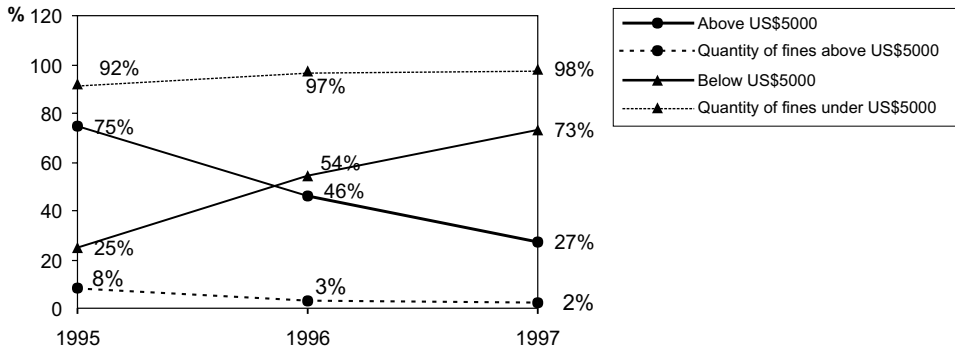
As discussed in the previous section, the system experienced an increase in the total amount of settled fines from 1994 to 1996. This took place because a high number of infractions during that period were calculated according to infralegal instruments.⁹¹ For instance, during 1995 in Pará state, the quantity of fines greater than US\$5000 amounted to only 8% of the total quantity of settled fines, yet this fraction also represented 75% of the total value of assessed fines for the year. By 1997, however, figures had reversed and the percentage of total fines under US\$5000 rose to 73% (Figure 14). One of the reasons for this reversal in a such short period of time is IBAMA's 'general adjustment' concerning the legal standard for the application of fines. This 'general adjustment' advised the application of Article 14 of Law 6.938/81, which limits the amount of fines up to US\$5000.⁹² IBAMA recommended this adjustment when the courts nullified infractions that resulted from administrative acts such as Administrative Decree 267/88.⁹³

Figure 13. Amounts and percentages of collected fines in relation to levied fines in the Legal Amazon and Brazil during 1994 to 1997



Source: IBAMA

Figure 14. Percentage of amount and incidents of fines above and below US\$5000 in Pará during 1995 to 1997

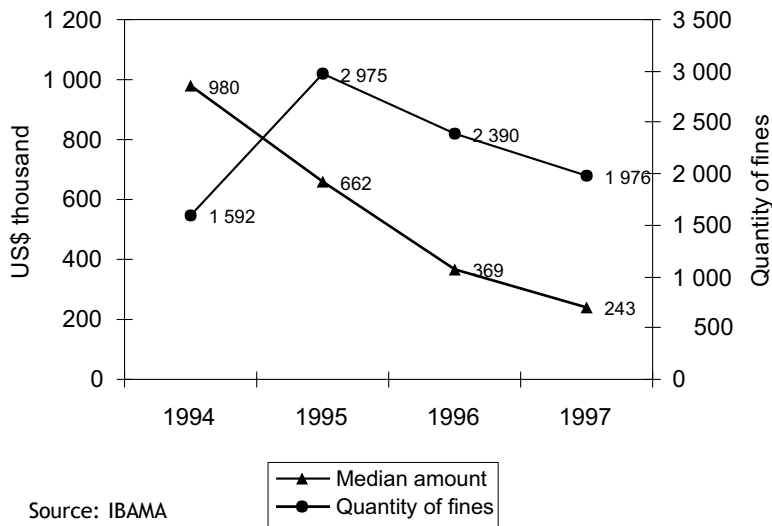


Source: IBAMA

Another cause for the low percentage of collected fines is that the value of fines is low. From 1994 to 1995, the number of collected fines doubled; nonetheless, the total sum of collected fines showed only an insignificant increase of 1% for that period. By 1997, the average amount of collected fines decreased 35% over a four-year period, ending at an average of 35% per year. The average sum for collected fines was US\$980 in 1994, but by 1997, this value diminished to only US\$243 (Figure 15). This decrease in the average value of a fine relates to changes in the method of settling fines.

To be fairly applied and yet serve as a deterrent to infractions, penalties should correspond to the magnitude of the damage caused by disobeying the law. However, the Brazilian system is deficient in this regard. In fact, the system of fines imposed by law 6.368/81 does not at all deter loggers or timber companies from violating regulations, nor does it stop illegal deforestation.

Figure 15. The median amount and the quantity of collected fines in Pará during 1994 to 1997



c) The effectiveness of forest law on sanctions

The federal government first enacted legal provisions to govern forest management only after 29 years of exploitation. For nearly three decades, forest management was regulated exclusively through administrative acts such as normative instructions and administrative decrees—all of which have limited legal power, at best. As a result, predatory and illegal exploitation of forest resources was punished under administrative guidelines, and these were easily and successfully appealed in the courts.

Therefore, one major cause for the historical ineffectiveness of sanctions arises from the fact that fines were assessed and collected according to norms based on infralegal instruments, and these norms could easily be contested in the judicial sphere. With the advent of the Environmental Crimes Law (Law N° 9.605/98), the government stipulated pecuniary penalties as the first important step to close the gap of juridical limitation inherent in administrative decrees. The new law punishes forest violations with fines ranging from US\$50 to US\$50 million.⁹⁴ The previous law limited the maximum amount of fines to US\$5000. So the new law could represent a more just, yet stricter, punishment for forestry violations. It applies fines based on the relative seriousness of violations. It takes into account the violator's records of previous compliance with forest laws as well as, and the violator's general economic capacity.⁹⁵ However, as mentioned earlier, the section of the new law that references administrative infractions must be regulated, and the present situation endures until such regulation is in place.

Under the current fine collection system, violators present their defence to SUPES and may ask for a reduction or cancellation of fines. IBAMA's legal division analyses the defence and the Administrator makes a final decision.⁹⁶ Guilty violators can appeal to two other administrative agencies,⁹⁷ and then, to the courts. Of course, the administrative appeals processes and the judicial process of environmental infractions are very slow. In addition, there is a time limit on individual cases, which makes the situation worse because it allows guilty parties to get off without fines

once the time limit elapses. Allowing evasion of penalties in this way, it effectively encourages illegal logging practices.

d) Factors that influence detection of forest infractions

Several factors influence how many infractions are detected by regulatory agencies. Political factors influence the nomination of agency officials, special inspection campaigns, and the formula for calculating fines. Politics, for instance, directly affect the rate of inspection because the allocation of financial resources depends on the politics and interests of agency officers. Special inspection campaigns have positively influenced the number of inspections since a routine inspection typically occurs only when a third party reports a possible infraction. The low rate of routine inspection is mostly due to the lack of available human, material, and financial resources. On the other hand, inspectors from other regional offices participate in special operations. These special teams are often better equipped materially; for example, they may have the use of helicopters. In addition, federal police support these operations. Thus, special operations campaigns frequently are freer to uncover infractions that result in the assessment of fines.

Another factor is the discretion given to individual inspectors to calculate fines. In this regard, the chief coordinator for the inspection team may be powerfully influenced by potential repercussions of the case, like how the press might handle a reported illegal activity that could have far reaching impact. Until the beginning of 1990, the system had no technical parameters for filing infraction reports, and that sometimes resulted in the application of large fines for small infractions and vice versa.⁹⁸ In order to limit such inequities, IBAMA conducted various inspector training courses; yet, cases persist in which inspectors apply revoked legal instruments.⁹⁹ Despite the 'general adjustment' initiative and inspector training courses, to this day, no single set of criteria or parameters are applied uniformly throughout Brazil.¹⁰⁰

C. Institutional Problems

There are four main problems evident in the control of sustainable management at the institutional level. These are: (1) lack of personnel and training; (2) lack of sustainability of governmental institutions; (3) lack of institutional coordination; and (4) lack of financial resources. As we have seen in the previous sections, in many instances these four problems are so interrelated that it is difficult to analyse each issue separately.

1. Lack of Personnel and Training

A general lack of personnel, disparities in the distribution of personnel, and lack of personnel training programs have all affected forest control in Brazil. To begin with, there is a drastic shortage in the number of personnel available to work in forest control. In 1997, 82 forest control agents were assigned to the Amazon.¹⁰¹ Given that the total Amazon forest area encompasses 5.5 million km², that gives a ratio of one agent per 67 000 ha of forest. Moreover, personnel are concentrated in large cities like

Rio de Janeiro and Brasília and not available in regions like the Amazon, even though much more intensive environmental control is needed there than in the cities.¹⁰² Naturally, regional offices are usually located where the concentration of personnel is higher. Although IBAMA has about 600 decentralized units,¹⁰³ many of them are located in low priority areas because they were created out of political pressure rather than need or convenience. So, in certain cases, local units do not operate in conjunction with the local government because IBAMA personnel have no authority there. In order to solve these problems, the government should probably restructure IBAMA (IBAMA 1997a).

Another major issue for forest control is the lack of suitable training, but such a lack prevails in many public sectors. In the forestry sector, the lack of knowledge about how best to perform inspections and other duties increases the resistance and evasiveness of violators (IBAMA 1992:49). Inadequate training also produces many errors in the infraction reports issued by public servants. These errors range from simple filling-in mistakes in which forms are improperly completed to major inconsistencies in determining types of infraction (IBAMA 1992:49). Basically, these errors arise as the result of the low level of education for public servants, as well as the lack of specific training in forest control. Thus, 30% of all forestry infraction reports are unsupportable and fine collection drops accordingly (IBAMA 1992:56). At best, the law is ineffectively enforced, and the public agency is ultimately discredited (IBAMA 1992:49). In sum, the lack of an adequate human resources policy at IBAMA is a major cause of unsuccessful forest control.

2. Lack of Sustainability of Governmental Institutions

A fundamental characteristic for successful long-term administration is the ability to sustain tasks over short-range changes in the administrative system. IBAMA, the main agency responsible for forest control, has always faced administrative instability. It has experienced very high turnover in the position of president. From the establishment of the agency in 1989 to 1996, IBAMA had thirteen presidents (IBAMA 1997a:6; World Bank 1994:270). And each time the presidency has changed, forest policy has been interrupted or administrative processes have shifted (Swioklo 1990:58; Hummel and Minette 1990:157).

Many examples demonstrate the impact of institutional stability on the control of forest resources. Here are a few. First, there is the case of forest concessions. It is a general 'practice' for timber companies to gain forest concessions according to their association with the political party in power. Ultimately, this practice endangers the sustainability of the forest because it promotes a system in which timber companies strive only to obtain easy and short-term concessions that can be fulfilled before the government changes, when they may lose favour (Silva 1993:205). Second, there is the case of loggers paying the government to conduct reforestation programs, rather than do them themselves.¹⁰⁴ Hence, the government created the so-called 'forestry fund' in 1980. Through this fund, the government collected money for reforestation, but it has not been used for that purpose (Carvalho 1997:40). In fact, no one is certain about the final destination and use of these funds (Sizer 1993:373). Whenever someone asks the government about this fund, the typical response is 'due to changes in administration, we cannot inform you regarding past administrative policies and decisions...' (Sizer 1993:373). Because of changes in the government, the responsible

parties have eluded investigation or punishment, and the disposition of the forestry fund remains unknown (Carvalho 1997:40). A third case amounts to little more than an excuse about what happens to paperwork at the local, regional, and federal levels. Once again, frequent political-administrative changes in the forest control institutions result in inadequate performance (Milano 1993:119). Taken together, these situations show how generally unstable policy implementation becomes every time there is a change in the government. For the most part, this instability occurs because director-level positions are filled through the recommendation of the divisional administrator, who is himself a political appointee.

3. Lack of Institutional Coordination

Close coordination between government institutions would be valuable in effective forest control because it would prevent overlapping responsibilities and the resulting confusion. For the sake of this discussion, let us consider two types of institutional coordination: (i) intrasectoral and (ii) intersectoral.

Intrasectoral coordination refers to cooperation among the distinct divisions within a single agency. Lack of intrasectoral coordination affects forest control planning and sometimes causes waste of financial resources. For instance, within IBAMA, information concerning records of timber companies is scattered among various offices, including the agency headquarters and regional and local offices. Thus, forest control is jeopardized simply because the primary agency is too poorly structured to be able to plan effective inspection routines (IBAMA 1992:49). In the case of IBAMA, this lack of intrasectoral coordination can be attributed to excessive segmentation within the agency's structure. In part, this division arises from IBAMA's origin in the amalgamation of four distinct agencies with separate purposes, and as mentioned in the discussion of administrative decentralization, IBAMA has undertaken the process of restructuring.¹⁰⁵ But this does not excuse IBAMA's sluggishness in implementing the needed changes.

Intersectoral coordination refers to cooperation between distinct governmental agencies which oversee the use of forest resources. Lack of intersectoral coordination increases according to the number of agencies involved. For instance, within indigenous reserves, IBAMA has exclusive authority to issue infraction reports, but often acts ineffectively because the law confers police power to seize illegal forest products on the Indian Affairs Agency (Fundação Nacional do Índio—hereinafter, FUNAI), but does not grant them the right to issue infraction reports.¹⁰⁶ Hence, FUNAI agents often encounter illegal logging operations in indigenous reserves during routine patrols, but corresponding infraction reports may not be issued until weeks later when the paperwork advances to IBAMA. On the other hand, when IBAMA agents encounter illegal logging operations within indigenous reserves, they cannot exercise any significant police action without a FUNAI agent present.¹⁰⁷ Similarly, other public agencies such as the Federal Police and the Civil Police lack explicit jurisdiction to act conclusively within their respective bylaws because they have no power to issue infraction reports. Such lack of coordination contributes to ineffectiveness of forest control, and makes it even less likely because of the great inconvenience in handling forestry infractions without IBAMA agents being on hand. IBAMA is not the only forest control agency that must extend itself across a vast territory, but its exclusive jurisdiction over infraction reports only diminishes intersectoral coordination.¹⁰⁸

Another classic example is the long-standing conflict between the National Institute of Agrarian Reform (INCRA) and IBAMA. INCRA administers forest reserves, which are part of settlement projects, but it makes no effort on its own to ensure that forest reserves are protected. INCRA administers the reserves but claims that IBAMA has responsibility for protecting the reserves. In turn, IBAMA says that it has insufficient resources to conduct this task and, after all, INCRA is already covering the ground of reserves (Giaino 1988:554). The lack of coordination often originates from such power struggles (Giaino 1988:555).

4. Lack of Adequate Financial Resources

Public agencies suffer the chronic problem of insufficient financial resources to effectively implement and enforce forest management laws. Field inspections and other means of detecting infractions cost a great deal. First, these costs will be examined considering the number of forest management plans registered with IBAMA and assessing the need for available financial resources to control registered projects. Then, the costs involved in maintaining a public agency to control forest management plans will be examined, as well as the costs involved in detecting infractions. The following section discusses the enforcement of forest management plans by focusing on the means for administrative sanctions through application of fines.

a) Growth in the number of registered forest management plans

A primary expense in the control of logging operations is the cost for the two field inspections required by the laws governing forest management plans. In that regard, this section will examine the impact of the number of forest management plans registered in the state of Pará upon the availability of financial resources.

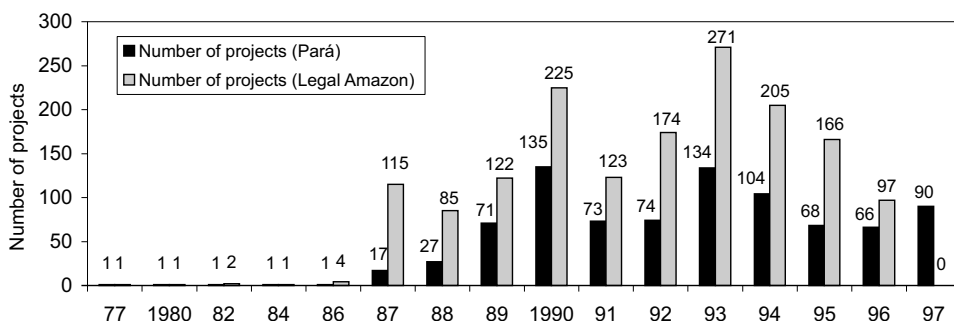
The demand for field inspection of forest management projects in the Legal Amazon began to increase in 1987 when 115 projects were registered. This demand peaked in 1993 with a total of 271 registered projects. In Pará state, there were 71 registered projects in 1989. Prior to that, the total number of registered projects per year had been small. In Pará, the number of registered projects peaked in 1990 and 1993, with 135 and 134 projects respectively. In other recent years, the number of registered projects for Pará has ranged from 66 to 104 (Figure 16).

IBAMA points out possible legal causes for peak years, but the most probable cause for the sudden increase in the number of projects in 1987 is the enactment of Administrative Decree 486/86.¹⁰⁹ This was the first legal instrument to regulate the natural forest logging process in Brazil. After that, the number of registered projects gradually increased until 1993. Then, they began to decline following the promulgation of Decree 1.282/94 and the publication of '*Medida Provisoria*' 1.511/96 which limits exploitation of mahogany and '*virola*' tree species (IBAMA/MMA 1997:17).

b) Need versus availability of financial resources

This section discusses the financial resources allocated for the enforcement of forest management plans. The needs analysis is based on the number of registered forest management projects, as discussed above.

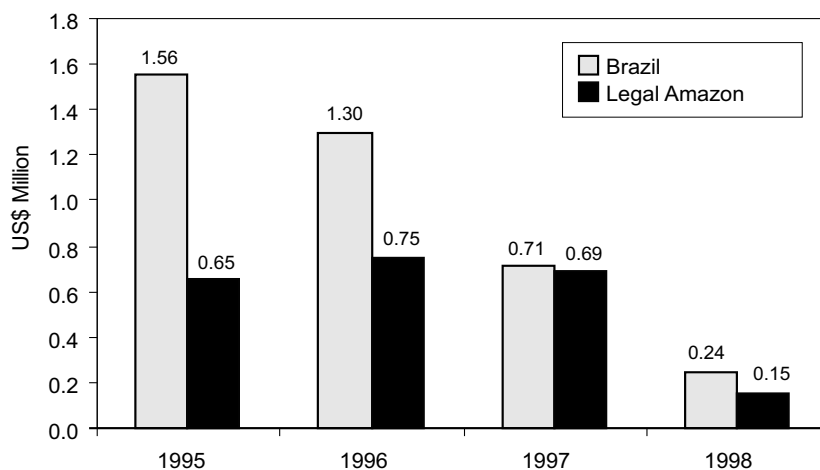
Figure 16. Number of forest management projects registered in Pará and Legal Amazon during 1977 to 1997



Source: IBAMA

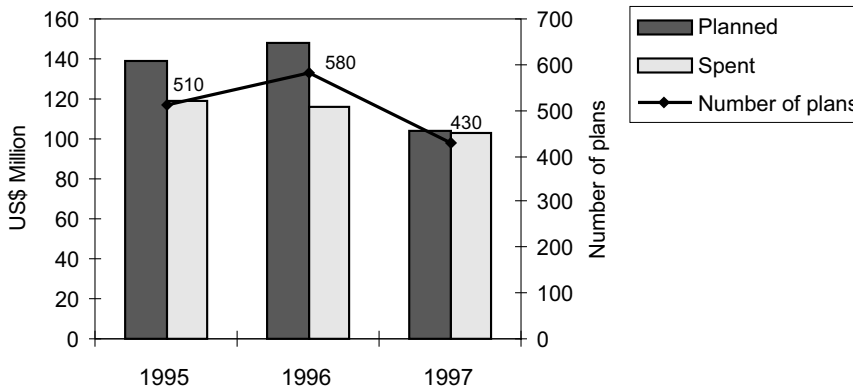
Generally, the budget allocation for forest management and forest resources stewardship in all of Brazil diminished from US\$1.5 million in 1995 to US\$710 000 in 1997, and it took a dramatic drop in 1998 when only US\$240 000 was allocated. In contrast, the Legal Amazon actually gained a slight increase in the amount designated for forest resource stewardship during the period from 1996 to 1997 due to a special operation of forest management inspections. However, even here, the budget took a drastic drop in 1998 when only US\$150 000 was allocated for all of Legal Amazon (Figure 17). In Pará, financial resources allotted for field inspections remained stable from 1995 to 1997 at about US\$101 000. Meanwhile, the number of forest management plans has varied over this period from a total of 510 projects in 1995 to 580 in 1996, and 450 in 1997 (Figure 18).

Figure 17. Resources allocated for forest resources stewardship in Brazil and Legal Amazon during 1995 to 1998



Source: IBAMA

Figure 18. Planned and spent resources for field inspection and number of forest management plans during 1995 to 1997 in Pará



Source: Elaborated from IBAMA data.

At present, each forest management project is theoretically inspected twice a year, once prior to logging (pre-logging field inspection) and once after (follow-up field inspection). In 1997, 90 new forest management projects were registered in Pará. Considering that the cost of one field inspection for an area of 1500 ha is US\$957, the cost to IBAMA for pre-logging inspections would amount to approximately US\$86 000 (Table 9). In addition, 360 projects required follow-up field inspections that same year. Computing a cost for these inspections plus pre-logging inspections for ongoing projects at a rate of US\$516 for every 300 ha, IBAMA would spend another US\$185 000, for a combined total of US\$271 000 (Table 10). Yet, when we compare the budget allocation for field inspections in 1997 (US\$107 000) (IBAMA 1997b), we can project that this amount would allow IBAMA to conduct field inspections of only 37% of all forest management projects in Pará.

Clearly then, in 1997, available financial resources were insufficient to conduct legally required field inspections for 100% of forest management projects. The projected number of pre-logging inspections for 1997 was 70; out of the 90 actual projects registered that year, only 25 were inspected. Likewise, 360 follow-up field inspections were planned, but only 185 were actually carried out (Table 11). We can conclude that one cause for this shortfall in the number of inspections is IBAMA's severe budget restrictions.

c) Cost of forest management control

IBAMA's costs for controlling a forest management project have two sources: First, there are the expenses for issuing logging permits; then, there are costs of following up and issuing subsequent permits for ongoing projects. As discussed earlier, administrative procedures for procuring logging permits occur in six phases, and involve five different divisions of IBAMA before the project is formally registered. During this process, at least 19 people at various levels handle the case (including secretaries, technicians, division chiefs, and the superintendent). While the full time period from application to approval takes approximately five and a half months (170 days), the actual amount of time spent by IBAMA agents working on any given case is approximately 123 hours or about 15 days (Table 9). The discrepancy between these two timeframes could arise from the wait while documentation is pending, but in some cases is certainly due to projects being misplaced, mishandled, or forgotten by regional offices, as well as delays in conducting pre-inspections.

Table 9. Human resources and governmental costs for issuing a forest management permits

Phases Category/Sector	Registration (Register)	Technical Analysis (DITEC)	Legal Analysis (DIAJUR)	Prior field Inspection (DITEC)	Permit Issuance (Gabinete)	Cadastro (DICOF)	TOTAL
Number of people involved	2	3	3	5	4	2	19
Time for analysis (hours)	1.42	32.41	32.41	32.41	0.82	24.16	123.63
Time spent (days)							170
Costs (US\$)							
Post office	7.84	7.84					15.69
Salaries	8.07	388.33	599.58	479.68	9.92	224.20	1 709.78
Per diem				335.93			335.93
O.S.T. /Mat. de consumo				141.07			141.07
Operational cost (US\$)	15.91	396.17	599.58	956.68	9.92	224.20	2 202.46
Indirect cost (US\$)							891.57
<i>Total cost (US\$)</i>							<i>3 094.03</i>

Source: Elaborated from data of IBAMA SUPES/Pará 1998.

Notes:

Register-Registration Division

DITEC-Technical Division

DIAJUR-Legal Division

Cabinet-Advisory Cabinet to the Superintendent

DICOF-Control and Inspection Division/Registration Sector

Time for Analysis (hours): The time was calculated based on the hours spent by people involved in the permit issuance process, including the Superintendent, the chief of the responsible division, the forest engineer or licensed agronomist, the secretary of the responsible division, and the official driver.

Time spent for the process: Based on the date of registration at the local office (POCOF) or regional office (SUPES) depending on the case, and the date of logging permit issuance. The total of 170 days is the average of 25 SFMP projects registered at IBAMA/Para during the period 1995 and 1996.

Post office: The cost of dispatch of documentation from the local office (POCOF) to the regional office (SUPES) and vice versa via FedEx.

Salary: Based on the hourly salary of all personnel involved in the process of permit issuance, including the Superintendent, the chief of the responsible division, the forest engineer or licensed agronomist, the secretary of the responsible division, and the official driver.

Per diem: Forest engineer = US\$ 59.23; Official driver = US\$ 49.38

O.S.T./Other expenditure: Other services by third persons (O.S.T.) include people and companies such as the hiring of a woodsman, a field assistant, car repair services and renting a boat. Other consumption goods include fuel, lubrication oils, parts and tires for the car.

To calculate a total cost for forest management control, the costs for each stage of the logging permit process must be considered. Based on a project of 1500 ha, the cost per ha is estimated to be US\$0.96/ha (although this cost varies somewhat according to the total area). The initial cost for a project of 150 ha is approximately US\$1330 including indirect costs, but the cost decreases as the area size increases. Therefore, the total cost of issuing a logging permit for a parcel of 1500 ha, including indirect costs, is about US\$3094 (Table 9). Moreover, along with the initial costs for

Table 10. Human resource and governmental costs of following up forest management projects

Phases Category/Sector	Registration (Register)	Field inspection (follow-up to 1o. Plot & prior to 2o. plot) (DITEC)	Permit issuance DITEC/ Gabinete	Cadaster (DICOF)	TOTAL
Number of people involved	2	5	3	2	12
Time for analysis (hours)	1.42	16.41	0.57	24.16	42.56
Costs (US\$)					
Post office	7.84				7.84
Salaries	8.07	242.37	6.06	224.20	480.70
Per diem		167.97			167.97
O.S.T. /Mat. de consumo		105.80			105.80
Operational cost (US\$)	15.91	516.13	6.06	224.20	762.31
Indirect cost (US\$)					439.31
<i>Total cost (US\$)</i>					<i>1 201.62</i>

Source: Elaborated form data of IBAMA SUPES/Para 1998.

Notes:

DITEC-Technical Division

DICOF-Control and Inspection Division/Registration Sector

Time for Analysis (hours): The time was calculated based on the hours spent by people involved in the permit issuance process, including the Superintendent, the chief of the responsible division, the forest engineer or licensed agronomist, the secretary of the responsible division, and the official driver.

Post office: The cost of the dispatch of documentation from the local office (POCOF) to the regional office (SUPES) and vice versa via FedEx.

Salary: Based on the hourly salary of all personnel involved in the process of permit issuance, including the Superintendent, the chief of the responsible division, the forest engineer or licensed agronomist, the secretary of the responsible division, and the official driver.

Per diem: Forest engineer = US\$ 59.23; Official driver = US\$ 49.38

O.S.T./expenditure: Other services by third persons (O.S.T.) include people and companies such as the hiring of a woodsman, a field assistant, car repair services and renting boats. Other consumption goods include fuel, lubrication oils, parts and tires for the car.

Table 11. Projected goals vs. actual number of field inspections carried out during 1995 to 1997

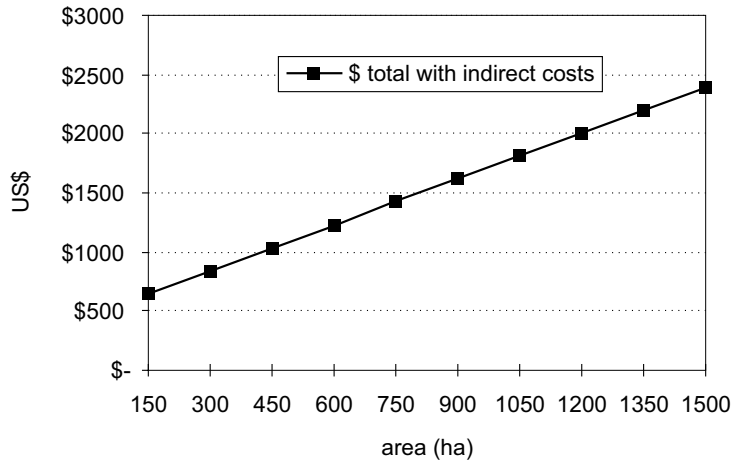
Inspection	Goal			Conducted			% Conducted/goal		
	1995	1996	1997	1995	1996	1997	1995	1996	1997
Pre field inspection	90	80	70	*	*	25	*	*	36%
Follow-up inspection	160	500	360	144	*	185	90%	*	51%

Source: IBAMA/SUPES/PA.

Note: * refers to unavailable data.

issuing logging permits, IBAMA must also assume annual costs for follow-up field inspections and further pre-logging inspections for plots to be exploited in each subsequent year of a given plan, not to mention the issuing costs for respective logging permits. The follow-up cost estimation per ha was based on a plot of 300 ha. Thus, these costs amount to about US\$838 (Figure 19).

Figure 19. Estimation of governmental costs of following up a forest management project per size of the area to be exploited



The most costly stage of the permit process is the pre-logging inspection, which is about US\$956 for a project of 1500 ha (Table 9). Current regulations stipulate that each project is subject to two field inspections. In such a system, a certain amount of redundancy is unavoidable, and some inspection items are needlessly repeated. Surely, it would be possible to verify compliance with one follow-up inspection and good estimates for current reforestation. Eliminating the pre-logging inspection stage would reduce current operational costs by 43% and would have the added benefit of speeding up the process for issuing permits, which, in many cases, are tardy as the result of delays in inspections. This indicates that the present complicated and costly process could be simplified and costs reduced simply by eliminating pre-logging inspections. In fact, the government might even realize some savings over the existing state of timber regulation practices.

II. Economic Incentives for a Market-Oriented Approach

A. Brazilian Economic Instruments

Public policy in the Amazon relates directly to objectives of national economic development rather than to a properly sustainable forest policy. The government provides economic incentives to forest-based industries in the central region of Brazil, and agriculture and cattle ranching continue to expand in the Amazon region. Historically, there has been no economic incentive that promotes sustainable forest

management, although this situation is slowly starting to change. Today, a handful of economic instruments may benefit sustainable forestry in the Amazon; they are fiscal (tax) incentives, low interest credit subsidies (loans), and direct governmental subsidies.

1. Fiscal Incentives

Up until today, most tax incentives extended to the timber industry went to forest plantations rather than to forest management projects in natural forests. In the first two decades after 1965, the federal government made a commitment to promote the economic development of forest-based industries.¹¹⁰ As a result, it developed legal instruments and initiatives to make those industries more profitable. One of the major initiatives during that time was the National Development Plan II, which included the Program for Charcoal-Fuelled Iron Ore Smelters and the National Program for Pulp and Paper Production.¹¹¹ This development plan included major fiscal incentives to traditional industry; e.g., it offered a 50% federal tax exemption for these industries. Until 1985, legal instruments provided concessions and fiscal incentives to the forest industry only for reforestation and afforestation.¹¹² In fact, some of these same incentives went to the farming and cattle ranching industries, and they cut down forests to achieve their aims.¹¹³

Exactly this form of fiscal incentive—as provided through the Investment Fund of the Northeast (Fundo de Investimento do Nordeste, or FINOR) and the Investment Fund of the Amazon (FINAM)—resulted in extensive deforestation throughout various regions of the Amazon (Grupo Interministerial 1995:44).¹¹⁴ Later, deforestation grew even worse because of fiscal incentives for cattle ranching granted by Decree-laws N° 1.134/70 and N° 1.478/76, even through these same laws also established options for reforestation in the Amazon region.¹¹⁵ Here was the problem: ‘The influence of projects promoted by economic incentives induced situations incompatible with the region because they promoted reforestation with monoculture plantations rather than the reintroduction of native species.’ (Grupo Interministerial 1995:44). This unfortunate situation continued through the mid-1980s.

However, after 1986, fiscal incentives came under serious scrutiny, largely due to evidence about bad land use policies that resulted directly from such concessions. So, the government curbed the abundance of fiscal incentives and made it difficult for the forest-based industries to thrive.¹¹⁶ By 1988, fiscal incentives for the establishment of forest-based industries were completely eliminated in Brazil.¹¹⁷ But that same year, Decree N° 96.233/88 granted new fiscal incentives for forestry development in the country. And following that, the government formulated new forestry legislation to provide fiscal incentives for reforestation by wood consumers whose products were used for industrial purpose.¹¹⁸ However, the law at the time did not consider the management of natural forests.

Furthermore, the rural land tax system (Imposto Territorial Rural, ITR) that prevailed until recently in the Amazon did nothing to the preserve forests. Instead, the law considered only land without forest as ‘productive’. Therefore, if the landowner cut down the trees, the land would become ‘productive’ and the landowner would receive a tax deduction. Conversely, landowners with forested property had to pay higher taxes (Uhl and Almeida 1995:111-2). In the last few years after the advent of

Law N° 9.393/96, deforestation has diminished because it is no longer based on a systematic tax advantage. The new rural land tax law still excludes 'forest area suitable for logging' from tax exemption, but it also gives exemption to the 'total area of sustainable forest management' as a 'productive land.'¹¹⁹ In that way, the new law significantly encourages forest management over forest depletion.

2. Subsidies Through Low Interest Loans and Governmental Programs

In Brazil, no bank offers special credit lines for forest management. By contrast, the economic incentive of subsidized rural credits for agriculture and cattle ranching in the Amazon have been characterized by low interest and long grace periods, and these programs have accelerated deforestation (Nascimento 1990:82). The primary mechanism for such subsidies was phased out in 1987, but the government resuscitated it in 1989 through the establishment of the Constitutional Financing Fund of the North (Fundo Constitucional de Financiamento do Norte, FNO).¹²⁰ This fund is earmarked for several objectives, including subsidized credit for agriculture and cattle ranching. Thus, it regenerates the circumstances through which forests are destroyed because of subsidized credit (Nascimento 1990:82). In this light, it is not surprising that out of 24 201 Amazon projects financed by the FNO from 1989 to June 1994 (Banco da Amazônia 1995), only 3% of FNO funds went to forestry.¹²¹

At the same time, national financial institutions like the National Bank of Economic and Social Development (Banco Nacional de Desenvolvimento Econômico e Social, or BNDES) have begun to define loan policies that incorporate the concept of sustainable development. As a result, BNDES has designated special resources for antipollution projects.¹²² Yet no such loans have so far been extended to forest management projects. The Bank of the Amazon (Banco da Amazônia—BASA) has considered the possibility of introducing a credit line for forest management, but it has postponed further consideration because concrete information about the economic return of forest management does not exist.¹²³ Furthermore, the government does not offer loans or subsidies for financing the machinery needed to conduct managed logging, yet they provide subsidies to facilitate acquisition of agricultural implements. As a result, timber companies must import expensive machines without the usual upfront money required for investing in a mega-enterprise.¹²⁴ The majority of forest management projects in Brazil are private, a fact which makes it that much more difficult to obtain loans from multilateral development banks. Although the World Bank and the Inter-American Development Bank offer credit lines to finance forest management projects, these loans are prescribed for governmental projects and do not apply to any private forest management projects in Brazil (Dourojeanni 1995:30).

At the moment, this gloomy situation seems to be improving. BNDES may soon introduce a credit line for logging operations conducted under certified forest management regulations. It is also taking steps to provide the first low interest loan for a forest management project in the Amazon. One requirement for this project is that the forest management project must be certified by the FSC (Forest Stewardship Council). In that case, FSC certification will be officially recognized and a forest management credit line would be established in conjunction with FSC forest management principles and criteria.¹²⁵ Thus, both FSC and forest management operations will gain much-needed credibility.

3. Governmental Indirect Subsidies

As discussed in the section on the evolution of forestry legislation, Brazil first created a fiscal incentive for reforestation in 1966. At that time, such an incentive was justified because investment in reforestation carried the onerous burden of large initial disbursements invested over a long maturation period. Yet, by 1988, these incentives supported the establishment of more than 5 million ha of forest plantation. Obviously, then, Brazil was able to structure the vital support for necessary economic activity within the country and to provide the specific conditions for the support of forest enterprises, at the same time as it built up essential technological and administrative infrastructure (Carvalho 1998:307).

However, distortions and abuses accumulated over the years until fiscal incentives seemed to have outlived their usefulness. In fact, abuse of the system undermined the government's objective to propel reforestation and resulted, instead, in federal support for the industries that harmed prospects for long-term reforestation of native species (Carvalho 1998:308). Other factors besides abuses also played a role in the failure of the incentive system. This led to the disproportionate and uneven distribution of monoculture forest plantations, disregard for forest productivity rates, and failure to observe minimum requirements for the preservation of renewable natural resources, at least in those areas where plantations were subsidized (Carvalho 1998:308).

Since 1970s, the government has developed some forms of economic incentive for forestry, in particular for reforestation, and other incentives distributed through the 'Superintendencia do Desenvolvimento da Amazonia' (SUDAM). SUDAM has dedicated its subsidies almost exclusively to projects that extract and process timber using technologies that are already relatively well known. They have provided little support for the lesser known procedures for managing and regenerating forests (Rankin 1983:373).

It is no surprise, then, that such fiscal public policies and the lack of credit lines have served as disincentives for the practice of forest management. At the same time, government and financial agencies created far reaching initiatives to study the feasibility of agriculture and cattle ranching operations in the Amazon (Nascimento 1990:79-92). In such an unsupportive environment, how could loggers or timber companies be expected to learn the importance of forest management practices?¹²⁶

B. Forest Certification

Forest certification guarantees that a specific forest area will be managed according to criteria for sustainable management to maintain balanced environmental, social, and economic conditions. In its broadest sense, forest certification applies to both natural forests and forest plantations, as well as to timber products and non-timber forest products.¹²⁷ However, for the purpose of this study, only the certified management of natural forests for timber production will be focused on. Since forest certification is voluntary, it depends upon the initiative of companies or organizations that have formulated their own reasons for interest in the forest management process. Thus, it represents a small but significant part of the larger picture.

1. The Forest Certification System in Brazil

At present, certification of natural forests in Brazil is only in its initial phase. The first discussion of this subject took place in September 1994. Out of that meeting, an interim national working group was formed to discuss more specific activities to promote forest certification in Brazil. In 1996, after a series of further meetings, the Institute of Forest and Agriculture Management and Certification (IMAFLOA), the Institute of Technological Research (IPT) and the Brazilian Silviculture Society (SBS) published a joint proposal enumerating a detailed plan to promote forest certification initiatives.¹²⁸ This proposal received the endorsement of 20 participants who represented environmental and social NGOs, industry, and the government.¹²⁹ As a result, in 1996 a working group of the Forest Stewardship Council (FSC) was officially established in Brazil, which held its first official meeting in January 1997. Participants in this working group included representatives from the environment sector, the economic sector, and groups concerned with social impact.¹³⁰ In addition, four nonvoting observers participated in the meeting.¹³¹

This working group focused mainly on establishing the Brazilian FSC standards for sustainable forest management in both the Amazonian natural forests and forest plantations.¹³² So, the process of forest certification takes into consideration two types of forests: (i) Amazonian upland natural forests and (ii) plantation forests.¹³³ After more discussion and workshops to involve all stakeholders, the working group completed its first draft in 1997. The national standards drafted have since then undergone large- and small-scale tests in both types of forests. The working group submitted its final draft for forest certification standards in Brazil to the FSC international office in May 2000.¹³⁴

In this document, the working group has defined a twofold process: (i) the certification of forests through the use of forest field audits to verify correct implementation and conduct of forest management practices; and (ii) the certification of both intermediary and final forest products by officially documenting the 'chain of custody.' Such certification guarantees that forest products which carry the FSC label have been manufactured from timber grown in sustainably managed forests.¹³⁵

2. Advantages of Forest Certification

Forest certification offers many advantages for timber companies that adopt the system. First, they enter into an ongoing relationship with governmental forestry authorities. As a result, government agencies can expedite paperwork and conduct high-level technical discussions with the timber interests.¹³⁶ Second, Brazilian timber interests gain better commercial access to international markets. Currently, more than 500 small-, medium-, and large-scale companies in the United States and Europe use exclusively certified timber.¹³⁷ Especially in Europe, it is easy for certified forest producers to find clients because demand exceeds the capabilities of the few certified forest management operations currently at work in tropical forests.¹³⁸ Third, certification opens the door to do business with public authority clients such as municipalities, and state or federal agencies. For instance, government agencies in the Netherlands and Germany have begun to consume certified forest products for public works. In fact, they recently announced that after 2000 they would buy only certified tropical timber (Camino 1998:99; World Bank 2000:2). Fourth, certified timbers command better prices in the market. Naturally, many buyers will continue to purchase cheaper

timber, but there is a growing circle of consumers who want to use certified timber products whenever they are available. And these buyers are willing to pay higher prices, even up to 15% more (Camino 1998:99). Fifth, certification can provide readier access to bank credit lines for forest management operations.¹³⁹ Sixth, certification has the added advantage of reducing the demand on public authorities to oversee forest control (Reid 1997). Properly conducted forest certification guarantees that forests are managed according to the criteria for sustainable forest management. Hence, the government can save both time and money by expending fewer resources to monitor and control forest management projects. Finally, forest certification can also improve the public image of timber companies (World Bank 1999:2).

3. Unique Features of Forest Certification in Brazil

The establishment of the Social Certification Fund (*Fundo Social de Certificação*) is one special by-product of forest certification in Brazil. IMAFLORA contributes a percentage of the cost for evaluating large-scale forest certification programs to this fund. In turn, the fund supports small-scale forest management operations and community-based forest programs by enabling them to gain certification as well. Furthermore, the Brazilian certification program has specified guidelines for community-based operations (Azevedo 1998:37). Thus, certification can maintain the goal of returning as much or more to the community than the timbering operations take away.

4. Certified Forest Projects in Brazil

Currently, only two certified forest management projects operate in the Amazon. The first company to obtain certification was *Madeira Itacoatiara Ltd.* (MIL Madeiras), located in Itacoatiara, in the state of Amazonas (Amigos da Terra 1997a:43). This operation covers a total certified area of 80 571 ha. Gethal Amazonas in Manicoré, Amazonas, conducts the other certified operation with a total of 40 862 ha of forest.¹⁴⁰ Seven more are currently undergoing the certification process, and will bring approximately a further 157 000 ha of Amazon forest under the umbrella of certified forest management.¹⁴¹

5. Auditing Certified Forest Operations

Under the FSC guidelines, evaluation of both forests and chain of custody does not end with granting certification. Auditors visit certified forests at least once every ten months and the certificate must be renewed every five years.¹⁴²

6. Major Challenges in Promoting Forest Certification

To successfully implement forest certification in Brazil and other Latin American countries, forest certification programs must overcome certain obstacles. First, local auditors must be trained to apply forest certification standards in areas where local

or regional standards are negligible. The role of local auditors is fundamental in guaranteeing proper evaluations of certified programs that satisfy local forest conditions (Azevedo 1998:38). Second, forest certification requires inspection of all commercial forest products, as well as forests and timber (Azevedo 1998:38). Third, the local economy must develop domestic markets for certified products since 95% of all Brazil's harvested timber currently goes for consumption at home (Azevedo 1998:37). In April 2000, an organization called the Group of Buyers of Certified Timber was established for the purpose of creating initiatives to further domestic consumption of certified forest products. This group of 50 companies has already increased the demand for certification timber to 1 million m³ per year. Their target for 2005 is to buy 100% of all certified timber coming from Brazil's natural forests.¹⁴³ Finally, all small producers and community-based programs must have financial support to implement certification of their operations' costs, and the costs of certification correlate inversely to the scale of operations (Camino 1998:97). While larger projects may pay higher fees for certification, the proportion is a much smaller percentage of the overall budget than is the case for smaller-scale operations. So, the forest certification process is often too costly for small-scale operations to undertake (Azevedo 1998:38).

7. The Outlook for Forest Certification in Brazil

Until recently, most logging companies were not very supportive of forest certification and its related expenses. However, environmentalists in countries that import Brazilian timber have applied considerable pressure on the tropical timber market through the threat of halting trade with countries that do not conduct sustainable forestry practices (IBAMA/FUNATURA 1996:52-3). In fact, various countries, such as the Netherlands and Germany, have begun imposing legal barriers on the import of timber from forests without sustainable management (World Bank 1994:277). Wider adoption of restrictive measures—whether through international agreements or unilateral decisions in countries importing tropical timber—could impose more stringent limitations on Brazilian forest product exports (IBAMA/FUNATURA 1996:52-3). In that case, forest certification may benefit if the pressure to export sustainably managed forest products creates enough need for Brazilian companies to certify their products. This should result in widespread adoption of sustainable forest management practice under the aegis of certification.

III. Other Issues that Affect Compliance with Forest Management Law

Several factors negatively influence compliance with Brazilian forest management law. Among these are the lack of forest culture, faulty land ownership structures, private forest interests, and mistrust of the government.

A. Lack of Forest Culture

In Brazil, no real 'forest culture' exists to shore up care and respect for forests. In the past, the Amazon was home to a certain amount of forest culture among riparian

communities, the so-called 'riverines' (or *ribeirinhos*). Riverines lived along riversides and developed an economy dependent upon rivers or streams (Hummel and Minette 1990:164). They extracted logs from floodplain forests (*várzea*) using rudimentary tools and methods. But following the arrival of widespread mechanized logging activities, this culture disappeared quickly.¹⁴⁴ Another form of forest culture used to exist in southern Brazil, where araucaria pine forests predominated. This culture depended on the araucaria for the production of crafts and paintings.¹⁴⁵ Today the araucaria forest that once served as a symbol for the southern region is nearly extinct. And with its passing, the way of life it supported has also disappeared.

The majority of the population of Brazil has never considered the forest an important asset. On the contrary, the popular view may be expressed as 'what nature gives, it will keep giving forever'. Such a perspective is clearly reflected by those Brazilians who enjoy the economic benefits of exploiting forests without concerning themselves with reforestation (Hummel and Minette 1990:157; Pandolfo 1994:204). In other words, the people consider the forest as a temporary 'tenant' of the land until they convert it to alternative uses (Pandolfo 1994:204). Such a philosophy may prove scientifically unsound, but popular thought is seldom based on scientific principles. Similarly, unscientific perspectives about the forest come from the notion that it is dangerous. Historically, the Brazilian forest has been described by developers as a 'green hell' full of diseases and pests. After all, it is the almost mythic source of yellow fever, malaria, mosquitoes, snakes, vermin, etc (Palmer 1977:127; Ribas 1990:179). Moreover, during the 1960s as the government started promoting development in the Amazon, the forests came to be viewed as barriers to progress and to the conquest of 'the frontiers'. So Brazilians are more likely to see standing forest as a sign of the 'old ways', while a clearcut area means 'modern' and progress (Nascimento and Kengen 1988:326; Nascimento 1988:5). Brazilians commonly use the expression '*mata em pé, homem deitado*', which might be translated as 'wherever a tree stands, a lazy man lies in its shade' (Carvalho 1988:307). Such beliefs are very common in Brazil and contribute to unplanned activity and settlement in the Amazon region; this, in turn, takes a toll in widespread economic and ecological consequences (Carvalho 1988:307).

B. Forest Organizations and Private Sector Interests

Very recently in Brazil, some private sector forest interest organizations have sprung up to actively promote forest management. These can be divided into two types: (i) research-oriented groups, and (ii) field training organizations. Research groups typically conduct field studies of forest management-related issues, such as forest ecology and low-impact logging operations. The results of these studies are published and disseminated among those parties with an interest in forests. On the other hand, field training organizations emphasize hands-on training experiences in the forests, usually through courses of one to three weeks' duration.

The Institute of Man and Environment of the Amazon (IMAZON) serves as a typical representative of a research-oriented group. One of the first private organizations to conduct experiments on the feasibility of forest management, it began a pilot project in 1989. A very common point of view says that forest management has not been widely adopted because too few studies and too little research have

been done to prove that it is economically viable (Bauch 1994:30). However, IMAZON's forest management pilot project clearly shows the contrary—that properly applied forest management techniques can yield economically feasible logging operations in the Amazon (Barreto *et al.* 1997:13-21). Despite such evidence, the major barrier to implementing forest management on a large scale in the Amazon rests upon the failure to disseminate correct forest management techniques among loggers. And in this area, change is only just beginning.¹⁴⁶ It is essential, therefore, to activate demonstration projects and training programs as soon as possible, and thereby to improve the technological expertise involved in logging operations (Bauch 1994:30). In addition, the government should continue to support its own research institutions, such as the National Institute for Research in the Amazon (INPA) and the Brazilian Institute of Agriculture Research (EMBRAPA). As mentioned earlier, these agencies started experiments in forest management as early as the 1960s and they can provide a broader historical perspective on research into forest management.

The second type of private sector forest interest group can be represented by the Brazilian subsidiary of the Tropical Forest Foundation (TFF).¹⁴⁷ In 1994, it began to offer technical training programs for the conduct of low-impact logging operations in the Amazon. The executive director of TFF remarks that 'the first step for countries interested in adopting sustainable forest management is the training of foresters.'¹⁴⁸ However, the lack of trained personnel continues to be the primary factor working against wider implementation of forest management in tropical forests throughout Brazil and all of Latin America.¹⁴⁹ TFF's pilot program in Brazil has conducted field training in the states of Mato Grosso and Pará.¹⁵⁰ Although these training programs are still in their infancy, the expansion of TFF activities reflects an interest among timber companies in the Amazon to adopt more economically viable techniques, which also conserve the forest environment.

Furthermore, several NGOs—such as the Worldwide Fund for Nature (WWF), Friends of the Earth (FOE), and IMAFLORA—have actively developed forest certification schemes according to the international standards for forest certification. In fact, WWF has served as the main coordinator in promoting forest certification in Brazil. WWF has also actively disseminated techniques for forest management through video.¹⁵¹ Meanwhile, FOE has been instrumental in establishing a 'buyers' group' which has made an official commitment to buy only certified forest products. IMAFLORA offers field training programs, workshops, and seminars for both forest certification and forest management. Moreover, IMAFLORA has established a program to support the development and commercialisation of certified forest products.¹⁵²

C. Insecure Tenure for Forest Lands

Land tenure has long been a major concern for sustainable forest management. In order to understand Brazil's land ownership structure, it is necessary to look back at the history of Brazil. The land tenure system in Brazil is a legacy of the colonial Portuguese system. In 1375, the Portuguese crown instituted the 'Law of Sesmarias.' This law established that 'owners of unused lands should either work them or transfer them to third parties, on pain of confiscation.' (Colchester and Lohman 1993:143). And this precise wording concerning land tenure persists today in Brazil's Land Statute of 1964.¹⁵³ That statute defines forest as a nearly worthless commodity (Pandolfo

1994:124). In order for landholders to receive title from the Institute of Agrarian Reform (INCRA), they must make 'improvements' to at least part of any claimed land area. By 'improvement,' the statute specifies clearing land to establish pastures for cattle ranching or agriculture production (World Bank 1994:277). Furthermore, this statute establishes usufruct rights for anyone who cultivates land for one year; if they maintain such use of the land for five years without interruption, they then have the right to the land title.¹⁵⁴

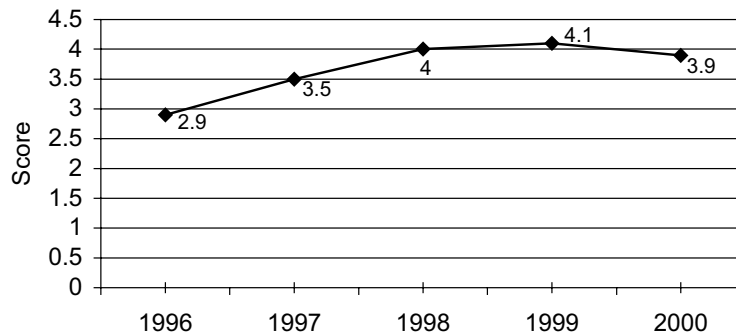
As an additional complication to land tenure, forest land in the Amazon is subject to land speculation (Fearnside 1993:543). There are three major categories of land ownership in the Amazon: (1) public lands amount to 25.5% of the region;¹⁵⁵ (2) 46% of the forest is held privately; and (3) 28.5% is unallocated¹⁵⁶. This study focuses on private lands because, by law, all logging must take place only in privately owned forests.¹⁵⁷ The size of private landholdings among the rich in Brazil is vast; 2% of the population hold 57% of all agricultural land in rural properties of more than 1000 ha each. Much of this land is held primarily for its real estate value rather than its agricultural worth (Colchester and Lohman 1993:316). In the Amazon, a similarly inequitable distribution of property prevails. Two-thirds of the farmers hold properties smaller than 100 ha, amounting to only 13% of the total land area. At the same time, 6% of the region's landowners hold properties larger than 1000 ha and account for 80% of the land volume (Colchester and Lohman 1993:316). Consequently, the majority of the region's forestland clearing takes place on large properties dedicated to cattle ranching rather than on small tracts cleared for subsistence agriculture.¹⁵⁸ Moreover, clearing large properties is often motivated by land speculation (Fearnside 1993:543).

So, acquisition of Amazon forestlands is spurred on by a weak land tenure system which favours deforestation. In addition, another provision of land law favours converting forests to other land uses. The law stipulates that public lands should be utilized for research, experimentation, and promotions that aim to develop agriculture, colonization, education, and technical advancement.¹⁵⁹ In response to this provision of the law, the government frequently sells large tracts of public land to the private sector at very low rates, simply to avoid the legal responsibility to use land according to the much more expensive propositions of the law! (Pandolfo 1994:113).

Sustainable forest management requires a long-term commitment to the forest. In Brazil, investing in forestlands is risky because they are subject to frequent land tenure disputes (Barreto *et al.* 1997:13-21). To effectively counter this problem, the government needs to develop legal propositions that support secure forestland tenure and make investment in forest management worthwhile (Perl *et al.* 1991:vi; Lele *et al.* 2000:34).

D. Lack of Legitimacy Within the Government

Historically, corruption has always been a serious problem throughout Brazil. According to Transparency International,¹⁶⁰ Brazil ranks among the 15 most corrupt nations in the world out of 54 countries surveyed. In 1996, Brazil scored 2.9 on a scale up to 10 (which is the least corrupt). In the past five years, however, Brazil has improved its ranking: it reached 4.1 in 1999, but experienced a slight decrease to 3.9 in 2000. This ranking places Brazil 42nd among 90 countries surveyed (Figure 20) (Transparency International 2002).

Figure 20. Corruption perception index of Brazil from 1996 to 2000

Source: Elaborated from survey data by Transparency International 1996 to 2000.

Corruption has also played a role within the Brazilian Environmental Agency (IBAMA) and it has affected both forest inspections and the enforcement of forest law. Many reports cite corruption as one reason for government inefficiency in forest control (Amigos da Terra 1997b; Amigos da Terra 1997c:47). The president of IBAMA, Eduardo Martins, admitted in a 1997 interview that corruption presents a serious problem for forest law enforcement (Junior 1997:11). Corruption in forest control arises from various sources, including complex administrative procedures and loopholes that allow avoidance of inspections. In addition, low salaries for public servants make bribery common. As the former president of IBAMA noted, 'the majority of public servants work hard but are poorly paid.' (Junior 1997:11).

In the section discussing loopholes in the permit process, it was suggested that bureaucracy and red tape forced loggers and timber companies to bribe public officers so that they will issue permits quickly. This finding is corroborated in a disclosure by a top regional IBAMA official from the state of Pará (Anonymous 2000). There, more than 100 cases of suspicious or irregular circumstances surrounded the issuance of logging permits. In the worst cases, permits were issued for nonexistent tracts of land. Loggers obtaining permits could cut timber anywhere and provide the necessary IBAMA documents to support legal timber activity and its commercial sale (Anonymous 2000). The areas most at risk under these conditions are forests within indigenous reserves, ecological reserves, other public lands and places where forests are still intact. Many of these areas are far from inhabited locales and there is no surveillance (Anonymous 2000). To make matters worse, there is no way to check the source of such timber. For instance, this same disclosure reports that more than 120 transport permits (ATPFs) were 'sold' by IBAMA agents for about US\$3 per m³ of timber (Anonymous 2000).

Other cases of corruption within IBAMA relate directly to field inspections. The top official at IBAMA's Pará office reports that, after he took the position of superintendent at the end of 1999, his office attempted to conduct several unannounced field inspections in certain municipalities. All of these 'surprise' inspections failed because, according to the officer, 'when we got to a municipality to conduct the inspection, there were no people there. That is, the sawmills and timber companies were closed or they did not have the required documentation on hand...' The obvious conclusion is that information about the field inspection strategy

was being leaked from within IBAMA (Anonymous 2000). So, the official decided to change strategies. He would set a date and time for the inspector to depart without specifying the municipality to be inspected. Field inspections then began to yield more results (Anonymous 2000). This same sort of corruption has also permeated IBAMA at the national level. For instance, one IBAMA internal investigation confirmed that someone in the planning sector was informing loggers about inspection strategy (Junior 1997:11). The president of IBAMA remarked in an interview that 'the agency was wasting time and financial resources for nothing.' Later, IBAMA began an investigation of this agent, but the corrupt official had still not been dismissed after a year (Junior 1997:11). As mentioned previously, the news media have pursued allegations of corruption levelled against state and local government officials in recent years; however, few investigations have led to conclusive results, much less actual punishment (Anonymous 2000).

Perhaps the impunity with which public servants have freely indulged in corrupt behaviour has finally begun to change in Brazil. At the beginning of 2000, the Ministry of the Environment ordered a temporary dismissal of public servants involved in one case of corruption in the state of Pará (Anonymous 2000). Recently in another case, the current president of IBAMA announced that the agency was launching an investigation of three forest agents from the Marabá region of Pará state (Ministério do Meio Ambiente 2000:1). Meanwhile, the federal judge of Marabá sentenced these three agents to prison for their involvement in another corruption case. If these accusations are confirmed, the forest agents will be dismissed (Ministério do Meio Ambiente 2000:2). IBAMA's president has issued a warning to officials suspected of corruption: 'it is sad to see public servants from IBAMA involved in corruption, but we intend to act with rigor in all such cases.' (Ministério do Meio Ambiente 2000:2). Such remarks exhibit the fact that public tolerance for corruption is declining.

Conclusion

Generally, logging in the Amazon has exploited the forest almost to its limits, and the rate of compliance with forest legislation has been extremely low. Although forest certification may prove to be a positive development, the historical lack of efficient controls and effective monitoring for logging operations has contributed to predatory logging in Brazil. IBAMA faces several problems that make it difficult to establish practical and effective forest control. These include: (1) complicated administrative procedures for procuring logging permits; (2) deficient processes for forest control; (3) low rates of compliance with forest laws; (4) ineffectiveness within the legal system for imposing penalties on violators; (5) institutional problems within the enforcement division; (6) scarce financial resources allotted to field enforcement at IBAMA; and (7) economic incentives for processes opposed to sustainable forest management. The system of forest certification seems very promising for the future sustainability of forests; however, many legal and institutional problems must also be overcome. As enumerated above, these problems will be discussed in greater detail in the following chapters.

The results of this study indicate that the present system used by IBAMA to enforce timber regulations is inadequate. The Brazilian government may take action to halt deforestation and create initiatives that promote forest management, but until forest authorities are properly structured, financed, staffed, and trained, there will be no chance for effective enforcement of forest laws.

Chapter III

Enforcement of Forestry Laws in Finland

Forest management has a long tradition in Finland. Since the first forest law was established in the 1880s, the Finns have actively developed it. Forest management has been successful in Finland, achieving a compliance rate of 96% in 1997. How did they achieve this? The two key features that enabled the Finnish system to be successful are the consensus-based approach and market-oriented approach. First, the 1928 Forest Act established a forest extension service to help the forest owners to comply with forestry laws, and to negotiate with them in the case of noncompliance with the laws. The Finnish system is not based on penalties; rather, they seek the cooperation of forest owners. Second, the Finnish system introduced economic incentives in the 1960s to promote sustainable forest management. As a result of many years of committed enforcement, the volume of the growing stock of timber increased.

The Finnish approach to enforcing the forestry laws has evolved throughout the years. This chapter discusses effective features of the Finnish system, including regulatory, consensus-oriented, and market-oriented approaches to promote forest management, and other issues that indirectly influence compliance with the law.

I. Finland's Regulatory Approach

A regulatory approach is one way to enforce laws. This approach uses law and administrative regulations to require forest owners to do certain things and restrict them from doing others. This section first discusses the legal framework of forest regulation in Finland. Then, it examines the enforcement system, including the authority responsible for forest control, the current forest control system, the degree of compliance, and sanctions for noncompliance.

A. Legal Framework of Forestry Regulation

1. Constitutional Framework

The Finnish Constitution establishes the principle that 'everyone is responsible for preserving biodiversity' and gives the public the right to freely access any forests without permission from the forest landowner. It permits all recreational activities providing they do not harm property or nature, except in some restricted areas.¹⁶¹

2. Major Laws Governing Forestry

Three major laws govern forestry in Finland: (1) the Forest Act of 12 December 1996; (2) the Act on the Financing of Sustainable Forestry of 12 December 1996; and (3) the Nature Conservation Act of 12 December 1996. The most important is the Forest Act, which guides and regulates silviculture in forests belonging to all kinds of forest owners and which has been in force since 1997. The Act on the Financing of Sustainable Private Forestry provides financial support to private forest owners. The Nature Conservation Act aims to maintain biological diversity, to conserve natural beauty, and to promote the sustainable use of natural resources and natural environment, awareness of general interest in nature, and scientific research.¹⁶²

3. Forest Management Law Evolution

The first Forest Act was enacted in 1886.¹⁶³ It prohibited the destruction of forests. The Private Forest Act enacted in 1928 followed the same principle. It prohibited forest owners from actions that would decrease the forest resource. The law also introduced many other innovative provisions. First, it required forest owners to reforest after clearcutting (Greeley 1953:100). Second, it prohibited companies from buying forestland so forest ownership would not become concentrated. This provision had a fundamental impact on how private forest ownership evolved in Finland (MAF 1998:10). Third, the law introduced 'Forestry Organizations' to supervise compliance with the Act and to give assistance to private forest owners (FFA 1998:4). The provision of the 1928 Forest Act that prohibits forest landowners from destroying the forest remains in effect in the current Forest Act of 1996 (hereinafter the Forest Act).¹⁶⁴

The goal of the Forest Act is 'to promote economically, ecologically and socially sustainable management and utilization of the forests in such a way that the forests provide a sustainable satisfactory yield while their biological diversity is being maintained.'¹⁶⁵ Until recently the concept of sustainability was limited to wood production and the main goal of forest management was to increase volume growth. But the scope of the law has changed significantly since 1992. Following international trends, it now focuses more on social and ecological aspects, in addition to sustainable timber production.¹⁶⁶ The first law obliging forest owners to consider biological diversity was passed in January 1994. Since then, efforts to find a balance between the productive use of forests and protection of biodiversity have become crucial to forest management planning in Finland (Hakkila 1995:15). Today, the main objective of sustainable forest management is to produce a stand of good quality and commercial value, while taking into account the biodiversity of forest ecosystems.

4. Loopholes in Forest Legislation

The Forest Act protects habitats of special importance and mandates the preservation of the forest's biodiversity.¹⁶⁷ However, loopholes allow forest owners to evade their obligation to protect important habitats. For example, if fulfilling their obligation to preserving diversity and habitats of special importance results in a significant reduction in forest yield or other financial loss, landowners can obtain special permits to carry

out management or utilization measures.¹⁶⁸ This reflects the law's clear concern for economic aspects.

Another loophole relates to social sustainability. Although the Forest Act explicitly includes social sustainability as a legislative aim, the issue is not developed in the text and the Act has no specific provision to promote it. Therefore, the forestry administration cannot implement this aspect of the Act.

B. Enforcement System

Although the government enacted its first Forest Act in 1886, initially the law was not efficiently enforced because the task was left exclusively to the government, as opposed to cooperative efforts between the government and private organizations. With limited personnel, the government could hardly supervise 20 million ha of forests accordingly. The results did not meet the government's expectations (Portin 1998:73). Consequently, the government revised the Forest Law and enacted the Private Forest Act in 1928 to improve the quality of forestry and the enforcement system. The 1928 Act established District Forestry Boards (present Forestry Centres) to enforce the law (MAF 1999b:17). Significantly, enforcement authorities started to emphasize forest extension services over punishment.

1. Administrative Organization of Forest Control

The highest authority in forest policy is the Ministry of Agriculture and Forestry. The Ministry's Department of Forestry has four divisions. The first two, the Forestry Development Centre Tapio and the Forestry Centres, are important for forest management control.¹⁶⁹ The other two are the Forest and Park Service and the Finnish Forest Research Institute.¹⁷⁰

The Forestry Development Centre Tapio supervises the enforcement of laws relating to forests by the Forestry Centres. It also develops Finland's forest policy to promote sustainable forest management and other forestry-related activities, including wood production, the use of forest resources, and the protection of the forest's diversity. In addition, it guides and supervises state-financed forest management and improvement projects, and forest planning and extension (MAF 1999a). The Forestry Centres are the authorities actually responsible for checking compliance with and enforcement of the Forest Act. They are responsible for implementing and monitoring forest legislation, drawing up forest management plans, giving advice on forestry regulations, promoting sustainable forest management by offering consulting, development, information, publication and training services, and providing forest tree seed procurement.¹⁷¹ An independent group of decision makers called the 'disassociated authority' oversees each Forestry Centre's decisions.¹⁷²

Among the responsibilities of the Forestry Centres described above, forest extension service and inspection have been the major means to ensure that forests are managed properly and that the forest management requirements of the Forest Act gain compliance.

2. Forest Extension Approach

This law enforcement approach emphasizes forest extension more than punishment. The forest extension service provides technical support services to help forest owners carry out forest management practices, including silviculture and logging practices and identification of important habitats for the protection of biodiversity (Hänninen 1999:245).

In cooperation with the Forest Management Associations, Forestry Centres transfer technical knowledge to forest owners, forest workers and other entities involved in forestry through instruction and practical field demonstrations (Brevig 1997:38). In Finland, Forestry Centres distinguish between two different target audiences: the forest owners and the forest workers. To do this, they use mass media,¹⁷³ arrange regional or local meetings, and advise individual forest owners and forest workers (Brevig 1997:44; Hänninen 1999:245). Providing extension services by giving individualized instruction and information has proven most efficient. Through personal contacts, Finnish extension organizations were able to contact 82% of the private forest owners over a period of five years in the late 1980s (Hänninen 1999:245; Nikunen and Ranta 1991:285).

Forest extension gives continuing training and education that helps forest owners adapt to new circumstances or demands, as required by legislation or changes in society. Finland has been committed to promoting sustainable development since the early 1990s when international society started to demand more careful forest ecosystem and nature management. Since then, Finland has included forest ecosystem and nature management into ongoing forestry practices, and the Forestry Centres have provided training on forest ecosystem management and identification of key biotopes.¹⁷⁴ In the fall of 1997, almost 6600 officials, machine contractors and forest workers took part in field training to identify the habitats which the Forest Act defines as valuable (FDC Tapio 1997c). However, forest extension has recently become more difficult because of changes in forest ownership. The section on forest ownership below discusses these changes.

3. Forest Field Inspection

Forest field inspections in Finland are conducted by sampling 3% to 5% of forest areas, rather than by inspecting 100% of forests as Brazil tries to do. The Forestry Centres conduct inspections of forest management operations. In the past, they used to conduct field inspections of 60% of the total forest area. Today they inspect only a sample of 3% to 5% of forestlands, which corresponds to about 8000 to 10 000 forest areas. They also inspect when forest use declarations seem suspicious. The Ministry of Agriculture and Forestry defines the target of 3% to 5% per year (FDC Tapio 1999a). This goal of 5% inspection has been a subject of debate in recent years. Some researchers consider 5% insufficient to maintain a good quality of forest management.¹⁷⁵ The quality of forest management, especially forest regeneration, also concerns the government (FDC Tapio 1997b:60).

The Forestry Development Centre Tapio developed the system for inspecting and monitoring sustainable forest management. However, as discussed above, the local Forestry Centres conduct the field inspections. To ensure the consistency of control measurements, all the Forestry Centres apply an equivalent system to supervise

the implementation of the Forest Act.¹⁷⁶ Finland's forest field inspection system is a tool to promote better forestry, instead of a means to punish forest owners.¹⁷⁷

C. Current Forest Control

As mentioned above, the Forestry Centres govern all Finnish forests, including those owned by the federal government. The Forestry Centre monitors whether the forestry-related laws are implemented and the requirements of forest management are followed. The forest management plan and forest use declarations are important tools for forest control (MAF 1997).

1. Forest Management Plans

A forest management plan contains information on, for example, the condition of forests and tree species, topographical maps, a detailed proposal for the activities during the next decade, operational instructions, and recommendations for the forest owner (Nikunen and Ranta 1991:286). Finnish law does not require forest owners to have a forest management plan. However, four out of five forest owners have one because the forest management plan allows them to project the economic profitability (FDC Tapio 1997a) and to have access to financing of forest activities (FDC Tapio 1999b:5).

The type of management plan for private forests differs according to the size of the forest area and intensity of forest activities. The plans are simpler for small areas (1-10 ha) because they do not demand complex computer calculations. Management plans for areas with intensive forestry operations have more detailed content and information, and require more work to prepare (Nikunen and Ranta 1991:286). Forest management planning is done in connection with governmental regional planning. The Forestry Centres or Forest Management Associations usually prepare the forest management plans for private owners and they use the data collected for regional planning to prepare the private plans (FDC Tapio 1997a). That facilitates the process of drawing up management plans.¹⁷⁸ The Forestry Centre sells the regional forest management plans to the local Forest Management Associations at a reasonable price to support their extension services and to prepare individual forest management plans (FDC Tapio 1999b:3).

The Finnish process of making forest management plans differs in crucial ways from the process in countries such as Brazil, Bolivia, and Costa Rica. Forest management plans are voluntary in Finland and the agents who make them do not have a direct material interest in the plan. Often, in tropical countries, forest owners hire the agents who make the plans. That means that the plan will help forest owners make a profit but not necessarily ensure sustainability. Since agents in Finland are independent, forests are more likely to be managed sustainably. Moreover, the cost of a forest management plan is reasonable (about US\$3.50 per ha)¹⁷⁹ and the government subsidizes about half of this (Nikunen and Ranta 1991:286). In most tropical forest countries, forest owners have to bear the total cost of the forest management plan.

2. Forest Use Declaration

A 'forest use declaration' (*Metsänkäyttöilmoitus*) is mandatory for all forest owners and holders of possession rights, and is an important tool for controlling compliance with the law. A forest use declaration must be presented to the Forestry Centre at least 14 days before logging operations begin. Declarations are also mandatory for the regeneration method, planting, and treatment of important habitats for preserving the biodiversity of forests.¹⁸⁰ However, forest owners don't need to present a declaration for household use cutting. Declarations are valid for two years.¹⁸¹

Forest owners are required to give notification at least two weeks before logging, but that does not oblige them to conduct the logging. It is also difficult for the authorities to supervise or inspect the site before logging starts. That may create a gap in the data presented by the government because the government compiles the data based on the information contained in the forest use declaration.¹⁸²

The Centres conduct their inspections five years after seedlings are planted. Until recently, the government used a notification system, but that did not offer reliable information on whether the logging had been carried out. The 5% inspection sample sometimes was not enough to maintain the needed regeneration areas.¹⁸³ So, the government established a new rule in 1999 that requires landowners to notify the government when they finish establishing their new seedling stands.¹⁸⁴

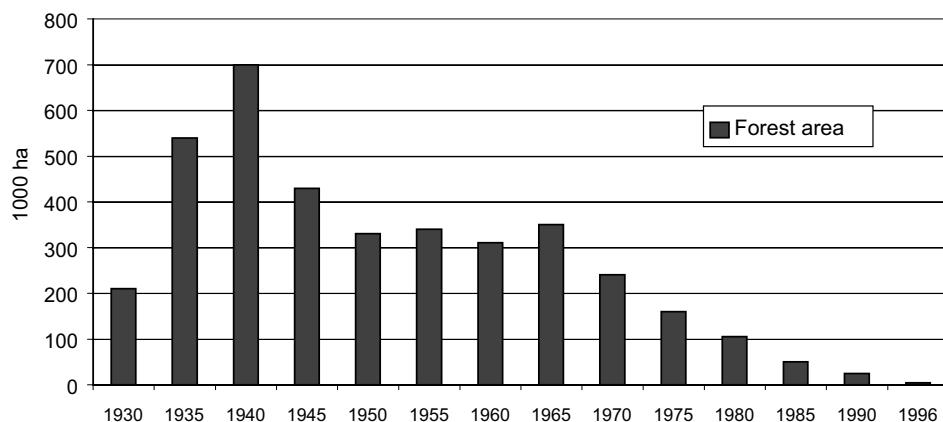
The government uses the present notification system, based upon forest use declarations, more as an information tool than as a regulatory tool. Nevertheless, since the Forest Act does not require a forest management plan, the forest use declaration is the main tool to verify compliance.

3. Compliance

Compliance is the degree to which forest owners or forest industries respect the existing legal requirements. Finland has high compliance because of its emphasis on forest extension. The high compliance rate is also a result of many years of enforcement. As the trend of compliance data shows, compliance was initially low, but has gradually increased, leading to a remarkable reduction in the number of violations (See Figure 21).

The main sanction the previous Forest Act established was that the offender's entire forest holding was excluded from commercial use for a set period of time.¹⁸⁵ During the 1940s, a total of 700 000 ha of forest were excluded from commercial forestry, based on these provisions. However, the excluded area has decreased steadily since then. Between 1940 and 1950, the excluded area fell drastically to about 350 000 ha. It then declined to 310 000 ha in 1960; 240 000 ha in 1970; 100 000 ha in 1980; and 25 000 ha in 1990. In 1996, the excluded area was only 4000 ha.

The Forest Act established a new form of forest control based on the forest use declaration. The compliance rate in 1997 was 96%. Three percent had remarks, which means some kind of recommendations to improve the forest activities' performance. Only 1% were irregular (Table 12). These achievements resulted from over 70 years of efforts by the forest control authorities and the organizations that provide forestry extension services to forest owners.

Figure 21. Forest area excluded from commercial use during the period 1930 to 1996

Source: Tapio annual reports 1992 and 1996, cited in Reunala *et al.*, *The Green Kingdom*, Otava Publishing Ltd, 1999.

Table 12. Cases of Forest Act violations in 1997

Types of violation	Number of violations	(%)
<i>Forest Use Declaration (FUD)</i>	119 926	100
Exception of forest use declaration (Sec.14)	2 280	1.9
Failure to make forest use declaration (Sec.18)	0	0
Police investigation (Sec 22)	24	0.02
Negotiation (Sec.15)	384	0.3
Specific inspection (Sec. 17)	11	0.01
Remedial measures(Sec. 20)	5	0.004
Different kinds of crime		
Overharvesting (Sec. 5)	8	0.01
Failure to conduct regeneration (Sec.8)	9	0.008
Important habitat (Sec. 10)	5	0.004
Protection forest (Sec. 12)	0	0
Forest offence		
Young stand (Sec. 5)	2	0.002
Important habitat (Sec. 10)	2	0.002
Protection forest (Sec. 12)	0	0
FUD concerning important habitat (Sec.10)	2 643	2.2
Needed special permit (sec. 11)	3	0.003
(Sec. 10 & Sec. 11)	4	0.003
<i>Total number of violations</i>	5 380	4.5

Source: Tapion Vuosikirja 1997 (Tapio Yearbook 1997).

The economic incentives given to the forest owners, to be discussed in the next section, have greatly contributed to achieving high compliance. As the data show, the remarkable reduction in the forest area which was excluded from commercial use occurred in the 1950s and 1960s. This coincides with the period when the government launched forest improvement programs such as establishing the Building

Act in 1958, and the Forest Financing and *Mera* Programme in the early 1960s (Hellström 1994:377). According to an officer of the North Karelia Forestry Centre, since 1928 when the previous private Forest Act was established, the Finnish forest control authority has used the slogan 'with guidance to good forestry.'¹⁸⁶

As discussed above, compliance in Finland is extremely high. However, for cases where forest owners fail to comply with forest legislation, the law establishes provisions on negotiation, which is known as the consensus-oriented approach.

4. Consensus-oriented Approach

Since the passage of the first private Forest Act in 1928, Finland has emphasized the consensus-oriented approach. The main objective is 'to encourage good forest practices through education, assistance to individual owners, and obtaining the technical service of a cooperative.' (Greeley 1953:101). Since 1928, most forest violations have been resolved through negotiation with the owner. Some cases were sent to the local court for a judgement. The outcomes of negotiations ranged from planting at the owner's cost to prohibiting further cutting until past infractions were resolved.

The consensus-oriented approach is still used today. In cases where the Forestry Centre verifies irregularities in the planned cuttings or failure to fulfil the obligations concerning the establishment of a new stand, the Forestry Centre will negotiate with the landowner to achieve agreement on remedial measures. If the negotiations are not successful, the Forestry Centre may require the party concerned to carry out the necessary measures. The Forestry Centre may enforce its decision with a conditional fine or with the threat to carry out the measures at defaulter's expense.¹⁸⁷ If the landowner is not willing to carry out the remedial measures, the Forestry Centre may decide to carry them out. The cost incurred from the task is paid in advance from the State Funds, which is then recovered from the guilty party through garnishment of wages or property.¹⁸⁸

Finland's unique approach to seeking the cooperation of forest owners has contributed to sustainable forestry. Negotiations are possible in Finland because forest owners are aware of the legal requirements as a result of the education efforts by the Forestry Centres. Therefore, the forest owners know what it is at stake and what they should have done. According to the director of the North Karelia Forestry Centre, it is rare to have a case that negotiations cannot solve.¹⁸⁹ Nevertheless, in case forest owners do not comply with the law and negotiations cannot resolve noncompliance, the Forest Act establishes sanctions.

5. Sanctions

Compared to countries such as Bolivia, Brazil, and Costa Rica, forest management sanctions in Finland are not strict and they have rarely been applied because the conflicts can be resolved with negotiation, as discussed in the previous section. However, the Forest Act does establish penalties such as fines and prison sentences.

The previous Private Forest Act did not establish strict sanctions for noncompliance with the law. But the new Forest Act has stricter legal sanctions, including fines and imprisonment.¹⁹⁰ Fines are applied to three levels of violations: (I)

minor offence, (ii) forest violation, and (iii) forest offence. The 'minor offence' refers to the failure to make a forest use declaration. In this case, the typical fine would be a 10-day fine, where the fine for each day corresponds to one-third of the daily net income of the violator.¹⁹¹ A few cases have been reported in which failure to make the forest use declaration resulted in fines.¹⁹²

A 'forest violation' refers to noncompliance with the provisions for tree stand felling, for establishing new tree stands, and for forestry carried out improperly in protection zones.¹⁹³ In these cases, the maximum fine would be a 150-day fine. There have been no recorded cases of forest violations since the Forest Act was established in 1996.

A 'forest offence' is considered a severe violation. Forest offences involve situations where forest owners infringe the provisions for felling and regeneration of forest. These include forest owners neglecting to leave sufficient trees in the area or to protect forest diversity,¹⁹⁴ or felling trees prematurely¹⁹⁵ or in protection forests¹⁹⁶ and protection zones.¹⁹⁷ In these cases, violators are fined or receive a prison sentence of no more than two years.¹⁹⁸ There have been no recorded cases of forest offences.¹⁹⁹ If one did occur, the Forestry Centre is supposed to notify the public prosecutor in order to bring charges. However, it does not have to give this notification if it considers the action or default of minor importance.²⁰⁰

Furthermore, forest owners must forfeit any economic benefit to the state which results from their noncompliance with the Forest Act. The state deducts from the forest owner's profits the costs of any remedial measures required under Section 20 of the Forest Act, such as the cost of establishing a new tree stand if the forest owner fails to do so.²⁰¹ These sanctions are more severe than in the previous Forest Act.

D. Institutional Problems

1. Lack of Financial Resources

The major institutional problem is the lack of financial resources for law enforcement. General public expenditures decreased in the early 1990s. This resulted in cuts in the Forestry Centres' inspection budgets and forestry extension budgets and led to staff dismissals, fewer inspections, and insufficient forest extension (Hänninen 1999:246).²⁰² The decline in forest extension may have caused problems for forest regeneration. In fact, a recent inventory shows that less than half of the silviculture treatment that was needed for forest regeneration took place. Specialists say that forest regeneration deserves the same attention as that given to biodiversity protection; otherwise, the growth of the forests will inevitably decline (FDC Tapio 1997b:60).

The advent of the new Forest Act requires more emphasis on forest extension because of new legal requirements regarding environmental issues. As a result, the budget for forest inspection and extension has been re-evaluated in recent years and the allocation for the Tapio and the Forestry Centres in 2000 showed a slight increase compared to 1999 (see Table 13).

Table 13. Budget trend of the Forestry Centres during the period 1999 and 2000

	1999 million (US\$)				2000 million (US\$)			
	Total Cost	Income	State Financing	Number of people	Total Cost	Income	State Financing	Number of people
Enforcement/ Inspection	13.2	0.7	12.2	254	13.7	0.7	12.7	254
Forest Management	13.5	0.3	12.7	260	16.2	0.4	15.3	310
Information, Extension & Training	5.3	0.6	4.4	89	8.5	1.0	7.5	140
Other activities	12.4	7.2	6.0	192	12.8	7.2	6.4	192
<i>Total</i>	<i>44.5</i>	<i>8.8</i>	<i>35.3</i>	<i>795</i>	<i>51.3</i>	<i>9.3</i>	<i>41.9</i>	<i>896</i>

Source: Valtion Talousarvioesitys 2000 (Finish State Budget 2000), Helsinki 1999.

Note: The currency exchange rate in October 1999: US\$1 corresponded to 5.6 Finnish Marks.

The overall budget increased from US\$44 million in 1999 to US\$51 million in 2000. The allocation for forestry information, extension and training, and forest management rose about 80% and 60%, respectively. The number of personnel also grew, particularly in forest management (16%) and the extension-related area (36%). In addition, 'the Ministry of Agriculture and Forestry launched a campaign in the fall of 1997 to promote the improvement of young stands. Some EUR 17 million in state subsidies is to be invested annually until the year 2002 to cover the costs of labour and specific extension work for individual forest holdings.' (Hänninen 1999:245).

II. Market-oriented Approach

Forest policy in Finland has been closely linked to national economic development policy because, as mentioned earlier, the forest sector has been a major source of net income. The Finnish government started to give economic incentives to private forest owners as early as the 1920s to support forestry investments. Although these investments would not immediately profit individual forest owners, they would benefit subsequent generations (Vihervuori 1998:160). They also benefit the national economy in the long term (MAF 1996b:12).

A. Economic Instruments Used in Finland

Economic instruments used in Finland were mainly direct financial assistance (aid), low interest loans, and tax subsidies.

1. Direct Financial Assistance and Low Interest Loans

In the late 1950s and early 1960s, the government launched a program for improving forests. The Building Act of 1958 consisted mainly of building forestry-related infrastructure, such as forest roads and ditches in the peatlands, and of improving

drainage systems. In the early 1960s, the Forest Financing and *Mera* Programme expanded the benefits provided by the Building Act, including direct subsidies for forest rehabilitation projects and long-term silviculture investments, and low interest loans for forest road construction, fertilization, and peatland drainage.

The Act on the Financing of Sustainable Forestry was enacted in 1996.²⁰³ Its main objective is to ensure the sustainability of timber production and the protection of biological diversity. Financial support is available for forest regeneration, prescribed burning, young stand management, forest fertilization, harvesting of energy wood, ditching renovation, and forest road construction.²⁰⁴ The amount of financial support differs depending on the region. For example, forest owners in northern Finland receive more than forest owners in the south do.²⁰⁵ One of the main requirements for the eligibility for financial support is to have a forest management plan.²⁰⁶ So, the Financing Act indirectly obliges the forest owner to have a management plan, which helps national forest planning.

Along with forest site improvement and intensive promotion of silviculture, the drainage of peatlands has contributed to the increase of forest stock. The majority of the drainage work was carried out in the 1960s and 1970s in connection with extensive forest improvement programs (Niskanen and Pirkola 1997:28; FFA 1998:14). As information about the long-term environmental effects of draining peatlands on runoff, nutrient leaching, downstream water systems, and fish has become more widely available, these efforts have come under increasing criticism. The major negative impacts have been the loss of natural peatlands, changes in the landscape, and damage to the environment. Specialists say important and unique peatlands should be protected. They estimate that 15% of the drained peatlands should be allowed to return to their natural state (Parviainen 1992:3).

2. Forest Tax Subsidy

Finland has used forest tax subsidies since 1922 to promote investments in silviculture and to encourage forest owners to sell timber (Niskanen and Pirkola 1997:28). Forest taxes can be divided into three major categories: capital income taxes, yield taxes, and property taxes. Capital income taxes are based on the estimated average yield of the forest by site quality, regardless of the actual harvest or existing timber stock. The yield taxes are based on the value of timber harvested. The property taxes are based on the market value of the property, including the value of the standing timber (Ollikainen 1996:16).

For many years, Finland used a capital income tax, known as the 'unmodified' site productivity tax. Forest owners used to pay forest tax based on the size of the forest area.²⁰⁷ Analysts criticized that system since the average taxable income did not always reflect the actual income-earning capacity of individual forest areas and the system did not provide incentives to boost the use of forest resources. To respond to these concerns, the government introduced some modifications in 1980 to promote forest management, e.g. tax reduction for established seedling stands. In 1991 the system was further amended to encourage more forest management and became known as 'modified' site productivity taxation (Ovaskainen 1992:57).²⁰⁸ Changes included exemptions for the regeneration area, tax deductions for management costs related to reforestation, brush control and commercial thinnings in seedling stands,

as well as in juvenile stands, a uniform capital income tax, and basing the annual site productivity tax on the estimated taxable income (Ovaskainen 1992:58).

However, this amended 'modified' site productivity tax system was also criticized and in 1993 was replaced by a new system for forest taxation, called the sales tax. The sales tax is based on forestry revenues (Ovaskainen 1992:62). In other words, owners pay taxes based on the amount of timber they sell. According to the new system, among the items that can be deducted from timber sales taxes are silvicultural costs, harvesting costs, and depreciation on the value of equipment. This system started to be applied to individual forest areas in 1993 with the forest owner's consent. After 2006 it will apply uniformly to all forest owners. During this transition period of 13 years, forest owners can choose either to stick with the old system or to follow the new one (Hänninen 1999:245).²⁰⁹

This new system has been criticized because it was adopted largely to simplify the administrative work, rather than to enhance economic efficiency (Ovaskainen 1992:57). Furthermore, critics argue that 'in practice, the inclusion of forestry revenues as capital revenues means that forest taxation can no longer be used for the purpose of implementing forest policy.' (Hänninen 1999:245). Especially important in the latest forest tax amendment was that forest owners were able to get a reduction in forest taxation after the establishment of forest plantations. However, this tax subsidy was removed in 1997 because the loss for the government was becoming substantial.²¹⁰

B. Forest Certification in Finland

Forest certification is a guarantee given by a third independent party, which shows that a product or process complies with the predefined ecological, economical, and socially acceptable standards of sustainable forest management. Its objective is to promote sustainable forestry.

Although forest certification is a market-oriented instrument to promote sustainable forest management, the Environment Centre considers certification an important tool to implement nature conservation in production forests (Indufor Oy, 1999b:3).

1. Forest Certification System in Finland

Discussion on forest certification in Finland began in 1994 and involved forest industries, forest owners, and environmental organizations. This led to the production of a preliminary study on the need for and feasibility of forest certification (Juslin and Kärnä 1999:293). The following year, the Nordic Forest Certification Project²¹¹ (1995-1997) was established to develop a joint Nordic forest certification system; however, it became mainly a forum for the exchange of information (Juslin and Kärnä 1999:293). In April 1996, the Ministry of Agriculture and Forestry appointed a committee on forest certification. During 1996 and 1997, the committee analysed the need and possibilities for implementing forest certification. The final report emphasized that forest certification was needed in Finland as a tool for marketing and information dissemination (Juslin and Kärnä 1999:293).

Parallel to this committee, a group called the National Working Group on Forest Certification Standards²¹² was set up in June 1996 and prepared its own study on the development of forest certification standards. The group presented a proposal emphasizing the special characteristics of Finnish forestry. These included the important role of small-scale forestry and the country's boreal conditions. It also stressed that the national standards that emerged should be compatible with other international systems in use. In 1997, the certification standard was tested in three areas in different parts of the country.²¹³ The results showed that certification is workable in Finland, and the proposal was approved in April 1997 based on a broad consensus among the interest groups involved (Juslin and Kärnä 1999:293; MAF 1999b:19; MAF 1998:13; MTK 1999b). After that, capacity building²¹⁴—which refers to the training of forest owners, workers, forestry contractors and instructions to all participating organizations, and further refinement and operational guidelines—was conducted in 1998 through the Finnish Forest Certification Project (Indufor Oy. 1998a:1; MTK 1998:21).²¹⁵ Finally, the National Forest Certification Council²¹⁶ was established in March 1999. The Council is responsible for the administration of the Finnish Forest Certification System (FFCS).²¹⁷ In addition to the Council, Regional Certification Committees were established to ensure the full commitment of forest owners, forest management associations, and other actors such as forest workers and contractors. The Committees will work in cooperation with the National Forest Certification Council.²¹⁸ Furthermore, the Council established an independent Forest Certification Appeals Committee to convene as the need arises. The Appeals Committee is to resolve any possible dispute between applicants and certifiers (Indufor Oy 1998d:3).

The Finnish Forest Certification System includes standards and criteria for sustainable forest management and the verification of timber sources. The Finnish standard for sustainable forest management consists of 37 criteria. One-third of the criteria are based on the Forest Act. Two-thirds of the criteria set standards that go beyond what the Forest Act requires (MTK 1999b). The criteria cover 18 ecological,²¹⁹ 12 economic,²²⁰ and 9 social aspects²²¹ of forest management. The Finnish Forest Certification System comprises two phases of verification: (i) sustainable forest management and (ii) chain of custody.²²² To verify chain of custody, there are two options depending on the producer and the markets. One option is 'to physically segregate certified wood during the whole procurement and production chain.' The second option is 'to establish the percentage of certified fibre in the end product'. This is done by verifying the origin of the wood following each delivery of logs from the forest and calculating the percentage of certified and non-certified wood arriving at the processing industry, based on the documentation that accompanies the logs from the forest to industries (Indufor Oy 1998e:3). The percentage of verified wood in the end product is monitored monthly (Indufor Oy 1998d:2).

2. Unique Features of Forest Certification in Finland

The most unique feature is that the Finnish Forest Certification System adopted an approach called 'Regional Group Certification,' which differs from other countries where the certification is granted individually. Group certification means that all the forests in a certain area will be certified at the same time. Finland chose this approach due to the small scale of each forest holding. Its forest forms a complex mosaic,

where the sustainability of forest management has to be evaluated beyond the official boundaries of each holding.²²³ This approach is possible in Finland due to the existence of a well-organized Forest Management Association system (Indufor Oy 1998c:1). Besides this main approach, certification is also granted to individual forest owners.

A second feature is the link between forest certification auditing and regular law enforcement, which helps to avoid unnecessary costs. The Forestry Centres that are in charge of law enforcement are the main providers of information for forest certification auditors (Indufor Oy 1998c:1). A third independent party also carries out the external auditing. To ensure the external auditors' credibility, the independent certification bodies are required to have accreditation to ISO 9000/14001 standards (Indufor Oy 1998e:3). The main sources of information for the forest certification audits are the local and regional Forest Management Associations, the Forest and Park Service for the public forests, and private forest companies. In addition, the National Forest Inventory is a major source of information on several criteria. The internally collected data is verified and random checks are carried out (Indufor Oy 1998c:3).

The Finnish Forest Certification System does not include product labelling. However, a chain of custody certificate can be used as proof that the wood used in the product has come from certified forests. So, the system is designed to allow the use of international labelling schemes for forest products. The need for a label is important because most of the timber products are for exports and export markets have begun to require labels to assure that the products come from sustainably managed forests.²²⁴

3. Costs of Certification in Finland

One requirement for forest certification systems is that they must be cost-effective. The Finnish Forest Certification System has proven to be cost-effective without jeopardizing the reliability of the results. The major reason is the use of the group certification approach at the Forestry Centre level or at Forest Management Association level (MTK 1999d:4). In terms of the evaluation of forest biodiversity, protection-related criteria are more cost-effective if the certification is carried out at the Forestry Centre level.²²⁵ The regional group certification costs only a few Finnish marks per hectare, whereas the certification of an individual forest holding would cost more than US\$18 per hectare (Simula 1999).²²⁶

4. Certified Forest Areas in Finland

Forest certification began in the summer of 1999 in seven different regions throughout the country.²²⁷ The first two regions to receive certificates were Central Finland (Keski-Suomi) and the Lapland (Lappi) regions in early November 1999. In Central Finland, approximately 96% (23 400) of small private owners have chosen to participate in certification so far. When you add large forest owners,²²⁸ the forest certification area covers almost 1.4 million ha of forestland (Indufor Oy 1999c:2). The Lapland forest certification area covers 6 million ha. In Lapland, all 16 Forest Management Associations participated in certification. After that, five other regions received certificates.²²⁹ By March 1999, the total certified forest area under the

Finnish Forest Certification System was 13.5 million ha, which corresponds to over half of all Finland's forests. This was expected to rise to 22 million ha by the end of 2000 (MTK 2000).

Since the Finnish Forest and Nature Conservation Act ensures that forests are managed sustainably, certification does not bring any major changes in forest management (MAF 1999b:18). In fact, the field test of forest certification criteria showed that Finnish forestry is close to the requirements established in the standards (Justin and Kärnä 1999:293).

5. Forest Certification Audit

The Finnish forest certification system presents two kinds of forest certification audit: internal and external. The organizations themselves carry out the internal audit. The objective is to measure how well forest owners are performing in forest management and if they are complying with forest certification criteria (FFCC 1999:10).

An independent party carries out the external audit. The results of two audits showed some minor noncompliance with the certification criteria. The first external audit was carried out during two weeks in early October 1999 in the Central Finland Region. These included spot checks in the forests, interviews with forest workers, and a review of extensive documentation. The result showed that five of the 37 criteria were not satisfied. Therefore, the certifier issued a conditional certificate to the Central Finland Union of Forest Management Associations (UFMA). Upon verification of corrective action, it will issue the final certificate. The required actions were mainly related to documentation such as lack of a sufficient level of detail on the SFM Target Programme, lack of a comprehensive description of the monitoring system, and lack of environmental impact assessments in old road plans. There was also minor forest harvesting damage near rivers and small bodies of water, and minor noncompliance regarding preservation of key biotopes. The implementation of planned corrective actions will be verified annually in connection with the monitoring audits (Indufor Oy 1999c:3).

The second external audit was carried out in the Lapland Union of Forest Management Associations. This result also indicated noncompliance with a few criteria. These were mostly the same criteria as indicated in the Central Finland region audit result. However, the Lapland region presents special features with regard to the criterion—in particular, the safeguarding of the Saami people's traditional means of livelihood and culture, and the integration of reindeer husbandry and forestry. A conflict with one reindeer grazing association in the Lapland region has caused some noncompliance (Indufor Oy 1999c:3).

6. Weak Points of the Finnish Forest Certification System

The Finnish forest certification system presents weak points inherent in a system based on small-scale forestry. The first point relates to the Finnish approach to certification of chain of custody, discussed earlier. It is difficult for the Finnish industry to physically track logs because they come from 13 000 to 15 000 small purchase contracts per year. Tracking separate stocks of certified and non-certified wood in the flow of raw materials, intermediate products, and end products would increase the cost of

wood procurement and processing, and would generate negative environmental impacts due to increased transportation and handling (Indufor Oy 1998b:3).

The second point relates to the auditing guideline, which is a consensus document that helps auditors determine whether the requirements of the criteria have been fulfilled. The guideline does not establish specific quantitative limits and recommendations for some criteria because of the diversity of field conditions in the country. For example, appropriate buffer zones for waterways and small bodies of water may vary from 3 to 50 m wide, depending on the slope and the soil type. Thus, the guideline allows interpretation by individual auditors, based on local circumstances (Indufor Oy 1998c:3).

Another weak point is that the environmental NGOs withdrew from the development process in 1998 and committed themselves to promoting only the Forest Stewardship Council (FSC) certification in Finland (FFCC 1999:7).

7. Advantages of Forest Certification

The advantages of forest certification can be seen at the national and international levels. At the national level, voluntary forest certification is a potentially good sustainable forest management instrument, although Finnish forestry was largely sustainable even before certification was introduced (MTK 1998:21). Forest certification also provides a marketing instrument that offers a business opportunity and a possible competitive advantage (Juslin and Kärnä 1999:290).

At the international level, Finland has adopted the forest certification system to adjust to the international framework on certification of sustainable forest management. 'The customers are insisting on receiving certified timber from Finland,' (Indufor Oy 1999b:3) and international credibility is important for Finland because 80% to 90% of forest production is exported (Simula 1999:2).

8. Finnish Forest Certification System and International Standards

The international standard requires that a certification system meet certain conditions including credibility and transparency, impartiality, and compatibility with international standards. The FFCS satisfies these requirements. All the participants of the Working Group have recognized the credibility and transparency of the Finnish Forest Certification System on Forest Certification Standards. The Working Group established the forest certification standard unanimously by an open and transparent process (MTK 1999d:4).

Another prerequisite is the impartiality of the certification bodies. To fulfil this purpose, the system makes a provision for inspection by a third independent party.

Compatibility with the international forest certification schemes has been one of the goals of the Finnish Forest Certification System. The Finnish system took into consideration the general principles and criteria of the Forest Stewardship Council (FSC), the Pan-European Forest Certification (PEFC), and other labelling schemes in terms of forest products; compatibility with the International Standardization Organization (ISO) 14001; and the EU's environmental management systems (EMS and EMAS) (Indufor Oy 1999b:3). Compatibility with different international certification schemes is important because it gives certification value in export markets.

The Pan-European Forest Certification (PEFC) scheme is currently evaluating the Finnish Certification System.²³⁰ The Pan-European Forest Certification makes provisions for labelling of products made from certified wood. Thus, the Finnish suppliers will have the opportunity to use the PEFC label on their products (Indufor Oy 1999a:2).

The international market has also started to recognize the Finnish forest certification system. The first company to accept FFCS is one of the largest British 'do-it-yourself' chains, B & Q. This company had so far accepted the FSC label, which is stricter than other international certification systems (MTK 1999a).

C. Other Issues that Affect Forest Management Compliance

The different approaches to law enforcement discussed in the previous sections affect the degree of compliance. Other factors that influence compliance include forest culture, forest ownership, the existence of private forest sector organizations, and government legitimacy.

1. Forest Culture

The forest is strongly connected with the Finnish way of life. Expressions such as 'the forest is the soul of Finland,' 'there is no Finland without forest,' and 'forests are the Finn's spiritual home' are very often heard in Finland. That is because forests have played a key role in shaping Finland's economy and its culture. Besides the economic benefits discussed in the previous sections, forests offer nonmaterial values. These include beliefs, myths, and customs related to the forests. For instance, the Finns traditionally believe in the existence of a mighty tree at the centre of the universe that protects the world and its order. From this ancient myth numerous customs have emerged, such as the use of wooden material, twigs, leaves, fire, and wood ash to cure diseases, and to protect people from accidents, pests, or evil spirits. In terms of customs, the felling and the old log-floating tradition has become a legacy expressed in forestry festivals, theatre performances, cinema, and in the radio program Forest Radio (Reunala 1999:236). In addition, the forest is reflected in every aspect of Finnish culture,²³¹ including literature, music, and in paintings where nature, the forest, and the countryside are portrayed (MTK 1999e; Reunala 1999:234-6; Hannelius and Kuusela 1995:134; MAF 199b:25).

Recreational use of forests has been a part of Finland's traditions, as in other Scandinavian countries (Boon 1997:9). This includes the picking of berries and mushrooms, hunting, fishing, camping, skiing, and hiking in the woods (FFA 1999). So, valuable recreational benefits are especially taken into account in preparing forest management plans. Walking and backpacking routes are marked and facilities are provided for lighting campfires.

2. Forest Ownership Structure

There are four major categories of forestland ownership. Private owners²³² own 62% of total forested area; the government, 24%;²³³ forest industries, 9%; and others,²³⁴ 5%

(METLA 1998:47; MAF 1999a). This study focuses primarily on privately owned forests because most logging takes place in private forests. Private ownership resulted from a particular historical situation involving a long tradition of an independent peasantry (Ripatti 1996:18). Thus, Finnish forestry is largely family forestry. Ordinary families run many small-scale forestry operations and there are more than 440 000 forest owners (MTK 1999c:20; MAF 1999c:27). Each holding has an average size of only 36 ha (MTK 1999c:4). Generally, these small holdings contribute little to the owners' total income. However, together they account for a substantial part of forest production. Fully 75% of the forest industry's timber supply comes from privately owned forests (METLA 1998:151,162; MAF 1999b:10). Privately owned forests also account for 69% of all forest growth (METLA 1998:62).

The predominance of private owners in Finland's forest ownership structure has favoured sustainable forest management.²³⁵ However, changes in society cause changes in forest ownership, which in turn have brought changes in forest management. Since the 1960s, as Finnish society has rapidly modernized, an increasing number of forest owners have moved to urban areas and acquired other sources of economic income (Karppinen 1998:44; MAF 1999b:10).²³⁶ This has increased the number of forest owners²³⁷ who live outside their property (Karppinen 1998:44). Thus, forest ownership has shifted from farmers to non-farmers.²³⁸ In the 1940s, 90% of forest owners were farmers (Ripatti 1996:27). But that percentage decreased to 76% by 1971, and to 38% by 1999 (MTK 1999c:5). When the majority of forest owners lived on their property and carried out forest activities themselves,²³⁹ it was easy to give advice and information about forest management. In contrast, today it is difficult to reach the forest owners to give them training or advice regarding forest management.²⁴⁰ Thus, forest activities have been delegated gradually to the forest management associations.²⁴¹ An additional reason for delegating the forest activities to forest contractors can be attributed to the mechanization of timber harvesting (to cut, delimb, and cross-cut the timber), which began in the mid-1980s. The percentage of timber harvesting that is mechanized jumped from 16% in 1985 to 82% in 1995.²⁴² Consequently, the forest owners are becoming more distant from actual forest field activities.

Another important change is the subdivision of forest holdings.²⁴³ The small size of private forest holdings presents many concerns for forest management. These include the possibility of deforestation when the price of timber increases, the worry that silviculture will be neglected, and high average unit costs for management, harvesting, and land surveying (Ripatti 1996:8-11). The aging of forest owners is also intrinsically linked with these trends. Partitioning of forest holdings can also cause forest fragmentation, which can negatively affect forestry (Ripatti 1996:8).

3. Private Forest Sector Interest Organizations

Forest Management Associations are voluntary associations formed by local forest landowners. They promote forest management and profitability, protect the interests of private forest owners by giving them professional assistance, and offer training and guidance on forest management and the use of forests (MTK 1999c:21).

In Finland, forest owners themselves finance and administer forest management associations.²⁴⁴ The associations are organized on three levels: local, regional, and federal. The local associations operate in every local government district. There are

approximately 257 associations and they have nearly 300 000 members.²⁴⁵ At the regional level there are 14 offices called the Regional Unions of Forest Management Associations.²⁴⁶ The Central Union of Agricultural Producers and Forest Owners (MTK) coordinates the interests of Finnish forest owners at the federal level. The local Forest Management Associations provide professional advice and services to forest owners regarding forestry operations. These services include the drafting and updating of forest management plans, forest training,²⁴⁷ forest management services,²⁴⁸ and timber sales.²⁴⁹ The function of the regional organization is to coordinate the local associations and the Central Union of Agricultural Producers and Forest Owners (MTK 1999c:20-23). Although membership is free, every forest owner pays a forest management fee,²⁵⁰ whether or not he or she is a member.²⁵¹

Local associations have sometimes been considered a part of the government structure because 'the stability and responsibility of these local groups and their recognition of the overall national interest were strengthened by partial public funding.' In fact, these forest owners' associations acted partially as law enforcers. Many Scandinavian foresters have criticized this system of law enforcement as lacking forcefulness and uniformity. However, the concrete result was good forest practice at the grassroots level, and the associations helped to make progress in private forestry much more a process of education than of law enforcement (Greeley 1953:106).

4. Legitimacy of the Government

In Finland, together with other Nordic countries, the political and economic system can be characterized as a developed democracy. The level of conflict is very low and the legitimacy of public authorities is high (Eckerberg 1995:190). Because of the high level of education and the tradition of democratic political culture, the Finnish people's attitude towards the government and towards legislation is positive; that is, they comply with the laws and other administrative guidelines. For instance, the Forest Development Centre Tapio's forest guidelines are important for the implementation of forest management. Although they are simply administrative guidelines, in practice, these guidelines have the power of law. The forest owners follow the guidelines because they trust the government. In Finland, it is culturally traditional to obey the laws. Another factor for the high legitimacy is the legal structure that provides the oversight of administrative organizations at the federal, regional, and local levels.²⁵²

Conclusion

Finland has been conducting forest management for over 150 years. Although Finnish forestry focused in the past primarily on maximizing the sustainable extraction of timber, Finland has been able to improve forest management practices. As a result, Finland has achieved stability in terms of growing stock of timber (METLA 1998:39) and increasing total forest land area (METLA 1998:43). Compliance with forest legislation is extremely high. The following six factors make the Finland case important and innovative: 1) economic incentives; 2) forest extension; 3) institutional management and cooperation; 4) small-scale forestry; 5) forest management plans; and 6) forest certification.

First, economic incentives have been essential supports for forest owners to carry out the forest improvement work necessary for continuous timber production. Such work would otherwise be unprofitable for private owners. However, economic instruments have not substituted for a regulatory approach; rather, they supplement the regulatory approach. Second, forest extension has been the principal factor promoting sustainable forestry in Finland (MAF 1997). Third, the unique institutional structure of the authority responsible for forest control working closely with the local forest management organizations has played a major role in forest control. This development of cooperation, 'linking up the enforcing agencies with established organizations, such as forest management associations, made technical services and skills available to every forest owner coming under the law.' (Greeley 1953:106). Fourth, Finnish forestry based on small-scale and private forestry has favoured sustainable forest management. Private forestry has played an important role in the forest industry's timber supply, accounting for 75% of the wood used by the industry. Therefore, the forest policies have been implemented to support private small forest owners. As a result, Finland has succeeded in establishing a system of forest law enforcement and economic instruments that does not discriminate against small forest land owners, as often is the case in tropical forest countries. Fifth, the Forest Act in Finland does not require forest owners to have forest management plans, but there are two advantages to having one. Forest owners can project economic profitability through a forest management plan. Having a management plan also enables forest owners to get access to financing from the government to promote sustainable forestry. Sixth, the forest certification system reinforces the efforts towards sustainable forest management.

In sum, the emphasis on forest extension over legal sanctions, and the use of economic incentives have been the backbone of enforcement strategies designed to reverse timber shortages. Besides the factors mentioned above, two other factors that influence the law compliance are the legitimacy of the government and the Finnish forest culture. However, these are factors unique to Finland that cannot be copied or applied to other countries.

The main challenge in Finnish forestry today is to take ecological aspects into account. With regard to the protection of biodiversity, Finland still does not have a complete inventory. The government is facing financial constraints, which prevents it from conducting a thorough biodiversity inventory. Consequently, there is a risk that some biodiversity will be lost.²⁵³

Chapter IV

Analysis and Recommendations

Forest management law implementation and enforcement are very complex and differ from one country to another. This chapter examines whether the forest management enforcement system which has been successful in Finland can be adapted to the situation in Brazil. As the previous chapters showed, the enforcement of forest policy and the control of forest management plans are handled very differently in these two countries. Nevertheless, some of the approaches used in Finland could be applied to Brazil and other tropical forest countries. These can be divided into three broad categories: the regulatory approach; the market-oriented approach; and the consensus-oriented/social control approach. Besides these approaches, there are also those factors culturally specific to Finland that cannot be applied to Brazil. This chapter primarily focuses on those approaches in Finland that can be applied to other countries. Often there is a presumption that forestry activities should be sustainable and sound, and should be managed and controlled by the government. However, this should not be taken for granted in Brazil or in any other tropical forest country.

As we have seen in Chapter II, Brazilian forest management is chaotic at present. Noncompliance with forestry laws is the main cause of this crisis. Finland, in contrast, has high compliance with forestry laws because of its emphasis on forest extension to promote good management of forest tracts. Compliance is also a result of many years of enforcement. The compliance rate among Finnish timber companies in 1997 was 96%.²⁵⁴ Three percent of the companies were given comments on their plans, providing them with recommendations to improve their forest management performance. Only 1% of Finnish plans were judged to be irregular. In contrast, audits in Brazil by the government found the compliance rate with forest management laws to be just 30% in 1996. Causes of noncompliance were many and varied, including corruption within IBAMA, deficient legal structure, the lack of any forest extension service, and various institutional problems within IBAMA. And even among the 30% of projects which appeared to fully comply with forest management laws, the management plans were not designed as a tool to produce sustainable timber, but rather as a means to satisfy legal requirements to procure logging permits (Silva 1997:14).

The following table summarizes the key features of the Finnish system and the current problematic Brazilian system. Based on the criteria that enabled the Finnish system to be successful, recommendations are made in a program of incremental reforms (Table 14). These can be divided into three categories: (1) practices that can

Table 14. Comparison of the main features of enforcement approaches between Finland and Brazil

Enforcement Approaches and their Instruments	Finland	Brazil	Recommendations for Brazil	Degree of Difficulty to change *
Compliance rate (%)	96%	30%		
Regulatory approach				
Forest management plan	Not required by law, but 60% of forest owners have a plan	Required by law, but just a formality	Establish punishment for making fraudulent forest management plans	1
Forest Use Declaration	14 days in advance	Not required	Establish punishment for approving fraudulent forest management plans	1
Logging permit	Not required	Required, but just a formality	Establish an internal audit system	2
Field inspection	3-5% of forest areas	Required for 100% of logging projects but not conducted professionally	Establish an external audit system	2
Legal sanction	Rarely applied	Applied, but low penalties	Notification of the start of logging	1
			Random inspection	1
			Conduct inspection during logging	1
			Check the timber transportation system at strategic points	1
			Activate sanctions established in the Environmental Law Crime of 1998.	2
			Apply alternative penalties-Make IBAMA a law & practice controller	2
			Improve the performance of public prosecutors	2
Institutional coordination	Clearly defined	Unclear	Clarify the separate state and federal responsibilities	1
			Establish inter-agency coordination system	2
			Establish independent audit system	2

Table 14. *Continued*

Enforcement Approaches and their Instruments	Finland	Brazil	Recommendations for Brazil	Degree of Difficulty to change *
Market-oriented approach				
Economic incentive such as:		No economic incentives for forest management	Establish public funding for forest improvement	2
Direct subsidies	Building forestry-related infrastructure Subsidies for forest rehabilitation projects and silviculture treatments		Establish tax subsidy for forest management Establish economic-incentives for forest management projects	2 2
Low interest loans	Road construction, fertilization, forest regeneration, prescribed burning, harvesting of energy wood, etc.			2
Forest tax subsidy	Capital income taxes, yield taxes & property taxes		Establish a lower tax (IC/MS) for timber from managed forests	2
Forest certification	Active	Incipient	Place surcharge on timber from deforestation areas Promote forest certification widely	2 2

Table 14. *Continued*

Enforcement Approaches and their Instruments	Finland	Brazil	Recommendations for Brazil	Degree of Difficulty to change *
Social control/Consensus-oriented				
Forest extension service	Widely used	None	Set up a forest extension service unit within the government	2
Advice	Private forest owners association (since 1920?) (Federal, regional & local level)	None	Establish forest management association in every local government	2
Negotiation	Pivotal to resolve forest violations	None	Difficult to carry out	3
Other factors & background info				
Forest culture	Strong value of forest	No forest culture in general	Increase awareness about forest's value	3
Land tenure	Secure (90% by inheritance)	Insecure	Clarify the land tenure system	3
Attitude towards the gov't authority	High legitimacy	Low legitimacy	Expand the participation of the society in the decision-making process	3
Corruption index**	10	3.9	Establish punishment for those public authorities involved in corruption	3
Forest management practices	70 years	25 years***		
Land use alternatives	Mainly forestry	Forestry, agriculture, cattle ranching, and mining		

Note: State government must be involved in forest administration, including permit approval, inspection, export control, and control of international obligations.

* Degree of difficulty to change: 1 = Easy to change; 2 = Somewhat difficult to change; 3 = Difficult to change

** According to Transparency International (TI), corruption index score ranges from 10 (least corrupt) to 0 (most corrupt).

*** Forest management plans started to be required in 1977.

be easily implemented; (2) practices that are somewhat difficult and may take time to implement; and (3) practices that are more difficult to implement and may take a very long time because they require changes in attitude toward the forest resources or changes in perceptions about the legitimacy of the governmental agencies involved in forest management. Some policy makers may argue that these culturally entrenched factors are impossible to change. However, it is always possible for any problematic behaviours or attitudes to change because the culture is changing as well. These reforms will require a series of sequential steps. Once one change begins to take place, it is easier to move on to the next one; thus, attempts at reform must start with the easiest steps.

I. Factors That Can Be Changed

A. Regulatory Approach

1. Forest Management Plans

Generally speaking, for the Finns, a forest management plan is a tool for forest management. Forest plans detail those measures which the industry takes during and after harvesting, and describe the effects of those steps in promoting a healthy and sustainable forest estate. However, for many timber companies in Latin American countries, a forest management plan is simply a hoop that the company must jump through in order to obtain a permit to harvest timber.

The Forest Act in Finland does not require forest owners to have forest management plans, but there are two advantages to having one. First, forest owners can project economic profitability through a forest management plan. Having a management plan also enables forest owners to obtain access to government financing to promote sustainable forestry. A crucial feature of the forest management plan in Finland is that it is prepared by the government or by the Forest Management Associations. That is, an agency which does not have a direct interest in the outcome of the forestry operations prepares the forest management plan. Since agents in Finland are independent, the plans they recommend are more likely to be ecologically sound and environmentally sustainable. This should then result in good forest management, if the owner implements the plan with care. By contrast, the Forestry Code in Brazil requires forest owners to have forest management plans. Ideally, a forest management plan is a tool to guide the foresters or forest managers in conducting good forestry practices. However, forest management plans in Brazil are typically not used as careful guidelines for sustainable timber production, but only to meet legal requirements to obtain logging permits (Silva 1997:vi). In Brazil, a private forest engineer hired by the forest owner prepares the forest management plan. As an employee of the owner, the engineer frequently drafts a forest management plan for the benefit of the company without regard to the sustainability of the forests. Illegal logging practices exist because professionals such as forest engineers prepare, submit, and implement fraudulent forest management plans. So, the punishment of forest engineers for fabricating or falsifying plans would be a valuable deterrent. A forest engineer can draft and follow up, effectively, three or four forest management plans. In Brazil, however, it is common that forest engineers submit and claim to follow up

dozens of plans. As noted earlier, forest management plans are approved by unprepared officers, whose supervision is under the management of political appointees. In general, the head of the administration is nominated by a political party whose aim is to protect the economic interests of certain classes.

Recommendations:

- 1) Enforce the Environmental Crime Law of 1998 that provides for punishment of these professionals and civil servants. In addition, empower the responsible professional's association. For example, in the case of forest engineers it would be the 'Clubes Regionais de Engenharia e Arquitetura' (CREA), which would censure unethical conduct of its members and possibly revoke their certification. It would also be necessary to audit CREA itself since its corporate culture favours corruption and lax control.
- 2) Enforce the Environmental Crime Law of 1998 that provides for the punishment of corrupt or negligent public servants (Law N° 9.605/98, Articles 66 to 69). Establish a systematic internal audit system of the performance of public servants who approve forest management plans.

2. Logging Permits

Whereas the Forestry Act in Finland does not require a logging permit, the Forestry Code in Brazil does require a logging permit to use forest resources. The Forest Act in Finland requires forest owners to present a 'forest use declaration,' a document equivalent to a logging permit, which contains all necessary information on logging operations, the regeneration method, planting, and the preservation of biodiversity of the forests. The 'forest use declaration' is an important tool for ensuring compliance with the law.²⁵⁵ This declaration must be presented 14 days before any logging operations begin. This requirement makes the process of inspection effective and efficient. Thus, forest management control in Finland has been successful. In contrast, in Brazil the procedures required to secure a logging permit have been problematic. Applicants must work their way through a complicated administrative procedure to procure logging permits. The bureaucracy is convoluted and slow, and legal loopholes make it easier for the loggers to push through poorly designed plans.

As noted earlier, logging permits can be either permits to harvest logs through forest management of natural forests, or permits for clearcutting.²⁵⁶ The main problem is that it is easier to be granted a clearcutting permit than it is to obtain a permit for logging under forest management. To follow the guidelines for forest management is considerably more costly and time consuming than simply clearcutting; there are extra costs required to prepare the forest management plans, to pay field inspection fees, and to prepare other paperwork. In addition, the present system requires a pre-logging field inspection of all medium and large-scale properties for forest management. A lack of inspectors to conduct the field inspection results in long delays which, in turn, encourages the use of bribes and fraud to speed up the process. However, if someone seeks only to clearcut a tract of land, no field inspections of any kind are required, either pre- or post-logging. As a result, an entrepreneur spends an average of 5 months to obtain a logging permit under sustainable forest management,

while permits for clearcutting can be obtained in a matter of days! On the other hand, logging permits issued for small-scale clearcutting for particular areas are used to log in areas other than those specified. It is vital to eliminate these barriers to forest management in order to protect the natural forest resources.

Recommendation:

Require a forest use declaration or some kind of notification before allowing logging operations. In the Finnish case, it must be presented 14 days before logging operations begin. This system should also work in Brazil because it consists of a simple form containing forest resource and logging operations' information. It will make the field inspection system much more effective.

3. Forest Field Inspection

Finland also differs from Brazil with respect to its forest inspection system. In Finland, forest field inspections are conducted randomly rather than being made on all properties; in contrast, forest inspections in Brazil are supposed to be done on all properties.

Rather than using inspections to catch and punish forest owners for violations, forest field inspections in Finland are used to promote better forestry. The Forestry Centres inspect only a sample of 3% to 5% of forest lands after logging.²⁵⁷ They also inspect when forest use declarations seem suspicious. There are concerns among scholars that the goal of 5% field inspection perhaps is not sufficient to maintain good forest management, but the overall results have been satisfactory, as shown by the high compliance rate. The Forestry Development Centre Tapio developed a uniform forest field inspection system to ensure the consistency of control measurements. In comparison, the current Brazilian system is supposed to inspect all properties. However, factors such as deficient legal structure, lack of human resources, and lack of financial resources cause enforcement problems for the sustainable management of forests. All of these factors in Brazil make it unrealistic to expect foolproof inspections. As noted earlier, logging through sustainable forest management is subject to a prolonged process of control before and after logging.²⁵⁸ The enforcement of forest management projects occurs in three stages after a logging permit is issued: (1) on the transportation of logs; (2) on timber industries; and (3) on the transportation of processed timber. At none of these stages does the inspector visually check the area where the timber was supposedly extracted. It is crucial in any inspection and enforcement system to check the forest itself, observing and monitoring the logging activities as they occur. This would include careful pre-logging inspection to verify that the forest composition is accurately described in the proposal, as well as later inspection of the forest during and after logging. The results of the audits carried out by EMBRAPA showed that none of these inspections were conducted properly. Another problem is a lack of field inspection of clearcutting areas and illegal logging areas. The field inspections are carried out principally on properties which are in the process of authorization or already authorized. However, a significant part of logging takes place in unauthorized forest areas using the documentation of authorized areas. This fraud is apparently hard to detect in the field because the inspectors of timber transport do not check the origin of the timber, as mentioned above.

Recommendations:

- 1) Field inspections should be conducted randomly, rather than attempting to inspect every logging site. This would alleviate delay in the permitting process due to lack of personnel or financial resources. In addition, independent forest engineers, properly registered and certified, could be hired when the number of inspectors (forest engineers) is insufficient to meet the demand.
- 2) Field inspections should be conducted while logging is taking place.
- 3) All types and sizes of properties should be subject to field inspection. This would prevent the clearcutting permit from being used to log in areas other than those specifically authorized.
- 4) Check the origin of the timber (forest management project areas) as part of the timber transportation inspection.
- 5) Inspect suspicious forest areas. Inspect those which show indications of logging operations taking place to determine if they are being conducted according to forestry laws. Illegal clearcutting should be inspected to identify the owners. Satellite images could be used to identify clearcutting in areas designated as permanent reserve (along the rivers), conservation areas, indigenous reserve areas, and forest areas recently logged through unplanned methods. Moreover, simply checking the timber transportation system, particularly in the Amazon, would be effective since there is always the need to get to urban timber stockyards. For instance, one might check the major highways near the urban areas or places where the use of ferryboats is obligatory, as well as river transport. This type of control would require little effort and be both cheap and effective in controlling the volume of timber designated for commercial purposes.

4. Legal Sanctions

Compared to Brazil, forest sanctions in Finland are not strict. They have rarely been applied because the conflicts can be solved with negotiation.²⁵⁹ The Finnish Forest Act does establish penalties such as fines and prison sentences; however, fines are seldom levied. When they are applied, most take the form of day fines, in which the fine for each day corresponds to one-third of the net income of the violator. The most commonly applied penalties are restraining orders or orders to restore the degraded forests.

By contrast, in Brazil fines are the most common penalty for infractions of forest law. However, the legal system in Brazil is deficient in imposing effective penalties. Fines levied by IBAMA are not an adequate instrument to promote compliance by logging industries with their forest management plans. The comparison of levied and collected fines shows that violators pay very low fines for illegal behaviour.²⁶⁰ For instance, illegal logging practices have been punished with low fines (the average fine equivalent to US\$195; the maximum US\$4000) due to a weak legal basis. Thus, the fine system does not constitute a deterrent to the violators. The actual collection of fines is only 30% of the total amount levied. The amount of collected fines and the amount spent by IBAMA's enforcement units were compared. Taking all states of the Amazon region together, enforcement activities in forest management represent a loss for the federal government. The amount of fines collected in 1997 covered only half of the enforcement costs in only two states of the Legal Amazon. Thus, the establishment of an effective system for collecting fines, and imposition of fines

sufficiently punitive to deter illegal behaviour for forestry industries are urgently required to improve Brazilian forest management.

Recommendations:

- 1) Brazil should enact a decree to activate the sanctions established in the Environmental Law Crime of 1998. As a result, it will be possible to levy fines based on a law, rather than on administrative acts. Severe fines could deter timber companies from conducting illegal logging. In addition, alternative penalties should be put into practice, such as the obligation to restore degraded forests.
- 2) The training and education of public prosecutors (*Ministério Público*) should be improved. For instance, build capacity to issue expert reports (*laudos periciais*).

5. Institutional Problems

Generally speaking in Brazil, institutional problems such as a lack of financial resources, lack of institutional coordination, lack of personnel and training, and lack of sustainability of governmental institutions have led to poor enforcement. As we have seen throughout this study, these four problems often are so intrinsically linked that it is difficult to analyse each issue separately. This section discusses the lack of financial resources and institutional coordination because these two problems are common to Finland and Brazil.

a) Lack of adequate financial resources

Lack of adequate financial resources is considered one of the major constraints on forest law enforcement. Although both Finland and Brazil lack adequate financial resources, there is a major difference between the Finnish and Brazilian budget allocations.

Finland experienced a major decrease in general public expenditures in the early 1990s. This resulted in cuts in the government's inspection budget and forestry extension budget.²⁶¹ The budget cutbacks started to affect the quality of forest management. Because of the problems detected in the quality of forest management and changes in the Forest Act requiring more forest extension assistance due to new requirements regarding environmental issues, the government re-assessed the budget for forest enforcement. The budget trend of the Forestry Centres during the years 1999 and 2000 shows that the government emphasized forest management, and forestry information, extension and training, increasing the budget allocation by 60% and 80%, respectively. It should be noted that the trend in budget allocation has been considerably higher for forest extension than for inspection itself.

Like Finland, low budget allocation for enforcement of forest laws has been one of the causes of poor enforcement in Brazil. Over the past several years, the budget allocation for enforcement has decreased relative to the number of approved forest management projects.²⁶² The financial resources available to regional offices are insufficient to support the actions they are legally required to implement. As has been shown, the costs of implementing the present enforcement system, including pre-logging and post-logging field inspection and timber industry inspection, are not

covered by the financial resources allocated for this purpose. The most costly stage of the forest management project control is the pre-logging field inspection.²⁶³ Eliminating this preliminary field inspection stage would cut operational costs by almost half. In contrast to Finland, where the government emphasizes forest extension and forest management, in Brazil the enforcement budget designated for forest management is small, and nonexistent for forest extension.

Recommendations:

- 1) Establish a designated budget for forest extension.
- 2) Prioritise inspections for forest management.
- 3) Abolish repeated and unnecessary inspection, such as prior field inspection of forest management projects.

b) Institutional coordination

Institutional coordination, such as communication between various agencies and internally among divisions, plays an important role in effective implementation of forest control because it prevents overlapping responsibilities. Whereas the Finnish government has clearly defined institutional coordination, the Brazilian government presents a confusing, uncoordinated institutional structure.

In Finland, the responsibilities of each governmental agency in charge of forest law enforcement are clearly defined. The Forestry Development Centre Tapio, among other responsibilities, supervises the enforcement of forest laws by the Forestry Centres and develops Finland's forest policy.²⁶⁴ The Forestry Centres are the authorities actually responsible for checking the compliance and enforcement of the Forest Act. By contrast, institutional coordination in Brazil has floundered. Brazil has a number of governmental agencies involved, none with complete authority to issue an infraction report, to inspect forest activities, or to confiscate illegal forest products. The infraction report illustrates a typical example of this problem. IBAMA has exclusive authority to issue infraction reports. So, when FUNAI agents encounter illegal logging practices, which often occurs within indigenous reserves, or when the Federal Police or the Civil Police encounter an illegal forest-related activity, FUNAI agents or police officers have limited powers to charge the violators since IBAMA's agents must issue the infraction reports.

In Finland, the authority responsible for forest control works closely with the local forest management organizations and this unique institutional structure has played a major role in forest control. This development of cooperation skills 'linking up the enforcing agencies with established organizations, such as forest management associations, has made technical services and skills available to every forest owner coming under the law.' (Greeley 1953:106). In addition, Forestry Centres, which are responsible for implementing and monitoring forest legislation, and drawing up forest management plans, are subject to an audit carried out by an independent group of decision makers, the 'disassociated authority', which oversees each Forestry Centre's decisions.²⁶⁵ By contrast, no systematic external audit system exists in Brazil. As a result, problems such as technical gaps in the logging permit issuance process are never resolved. The only audit that was ever carried out was a field survey by EMBRAPA in 1996. This study revealed that forest management projects in the region of Paragominas (Pará State) did not follow silvicultural treatments, logged trees that

had diameters smaller than that authorized by the law, overestimated the volume of commercial timber, and did not present prospecting inventories of timber species to be harvested. In short, the industries failed in a variety of ways to implement the planned forest management techniques.²⁶⁶ This audit suggests that forest management plans present widespread problems. This kind of survey was unprecedented and it was not repeated because there is no systematic, independent, auditing system of forest control in Brazil.

Recommendations:

- 1) Clarify and distinguish the separate responsibilities for forest administration of the state and federal levels of government. For instance, as a result of this confusion, the so-called Federation Pact (*Pacto Federativo*) has not been effective in its aim to coordinate the administration and subsequent forest control between IBAMA and State Environmental Agencies (OEMAs).
- 2) Establish an interagency coordination system among the institutions involved in forest control. In this case, there is a need to establish a unified interagency coordination system that allows any institution involved in the surveillance of forest violations to effectively start administrative processes for forest infractions.
- 3) Introduce an independent auditing system to oversee the process of authorization and to monitor already authorized forest management projects. In this case, a group of independent auditors formed by a commission of registered consultants, researchers, and representatives of civil society would audit the forest management projects approved and inspected by the public agency. The audits would improve the logging permit issuance procedures and reduce corruption.

B. Market-oriented Approach

Important in the analysis of forest resources management are fiscal and financing instruments, and the establishment of forest certification as a market instrument. This section discusses those instruments as used in Brazil and Finland to promote forest management.

1. Taxes, Subsidies, and Low Interest Loans

Government policies, such as taxes and subsidies, have a strong impact on forest management. In Finland, governmental policy has had positive impacts in promoting sustainable forestry; on the other hand, the policies in Brazil have had a negative impact on the forest, causing deforestation and degradation.

Economic incentives in Finland supplement a regulatory approach. They have been essential supports for forest owners to carry out the forest improvement work that is necessary for timber production. Otherwise, forestry would be unprofitable for private owners. Finland started to use this instrument in the 1950s and it greatly reduced illegal forest activities. The Act on Financing Sustainable Forestry of 1997 broadens the objectives, not only to ensure the sustainability of timber production, but also to maintain biological diversity and to undertake forest ecosystem management.²⁶⁷ By contrast, the current system in Brazil provides no economic

incentives to promote sustainable forest management. Rather, the government established fiscal and financial incentives to encourage economic development in the Amazon, favouring the establishment of agriculture and cattle ranching. In terms of forestry, in the 1960s forest-based industry development was encouraged by forest sector tax incentives. These incentives were provided to promote investment in large-scale industrial forest plantations rather than forest management of natural forests. This initiative resulted in the establishment of about 6 million ha of forest plantations, mainly concentrated in the central-southern region of the country. In the 1970s and 1980s, other programs for the expansion of pulp and paper production, and charcoal production for the iron and steel industry were introduced. These fiscal incentives were gradually phased out, but they were replaced with other economic incentives designated for agriculture and cattle ranching, which do not favour forest management of natural forests.

Nevertheless, this discouraging situation seems to be improving. One of the major financial institutions in Brazil, the National Bank of Economic and Social Development (BNDES), is planning to provide the first low interest loan for a forest management project in the Amazon. As we have seen, the public policies of fiscal incentives and bank credit lines favoured deforestation with no counterpart for positive results (Hummel and Minette 1990:157). The lack of financial mechanisms to promote forest management is jeopardizing the forests. According to public policy specialists, the subsidies given in Latin American countries have proven not only to be uneconomical and environmentally unsustainable, but have also created opportunities for corruption (Hafner 2000).

An economic incentive approach benefits the forest landowner and the industry. It does not burden forest landowners with heavy management costs. Finland put this approach into practice in the 1960s. However, Brazil is just beginning to introduce proper economic incentives for promoting sustainable forestry. The evidence is strong that economic-oriented approaches result in greater 'environmental' gains than most direct on-the-ground regulations, and they are less costly (Hyde 1998:11).

Recommendations:

- 1) Establish public funding for forest improvement.
- 2) Establish a financing system that provides financial support to private forest owners. It should work because the Brazilian government has started to emphasize the importance of forest policy. Some kind of financial support for private forest owners is necessary in Brazil because forest management requires a large investment.
- 3) Establish tax subsidies for forest management, including silvicultural costs, harvesting costs, and depreciation on the value of equipment. This should help in Brazil because it would give incentive to forest owners to manage the forest properly.
- 4) Establish economic incentives for forest management projects. Such economic incentives could be the opening of bank credit lines at low interest rates, or giving fiscal incentives for those forest owners who conduct forest management or preserve the forests according to forest laws.
- 5) Establish a lower tax (*Imposto de circulação de mercadorias e prestação de serviços*, ICMS) for timber from managed forests, as compared to that coming from deforestation areas.
- 6) Place a surcharge on timber that comes from deforestation areas.

2. Forest Certification

The forest certification system in Finland reinforces sustainable forest management. The system recognizes the special characteristics of forest ownership in Finland, namely that most forest holdings are small and privately owned. Its main feature is that certification is carried out in the form of regional group certification, which differs from other countries. Forest owners in Finland have widely accepted the forest certification system, as shown by the large number of hectares certified since its establishment in late 1999. On the other hand, certification has not led to any major changes in forest management practices. It appears that forest certification in Finland has largely been carried out to gain greater access to timber markets for export and has increased the total cost of the system with few immediate improvements in forest management. It is a good sign that a forest certification process is gradually developing in Brazil. The objective of forest certification in Brazil is to have wide access to new markets rather than to promote forest management. One particular initiative indirectly linked with the forest certification scheme is the establishment of the Group of Buyers of Certified Timber. This kind of development of a market for certified forest products is essential as a tool to stimulate the promotion of sustainable forest management. Forest certification will give unprecedented opportunities to the timber companies to have access to markets for sustainable products in Brazil (Amigos da Terra 1997a:43).

Although the forest certification system seems very promising for the sustainability of forests, there are many legal and institutional problems, such as legal deficiencies in the enforcement procedures, lack of financial resources, and lack of institutional coordination, that must be overcome.²⁶⁸

Recommendation:

Promote forest certification widely and include small forest owners. This should work because the forest certification process has already started in Brazil and in other Latin American countries. The establishment of forest certification with its successes in introducing forest management issues into the forest enforcement process is a promising area of forest control.

C. Social Control/Consensus-oriented Approach

1. Forest Extension Service

The forest extension service, as discussed earlier, helps forest owners to carry out forest management practices, including silviculture and logging practices, and to identify important habitats for the protection of biodiversity.²⁶⁹ Therefore, the forest extension service is one of the essential factors in achieving sustainable forestry. Forest extension has been the backbone for sustainable forestry in Finland; in contrast, forest extension services on a large scale do not exist in Brazil.

The forest extension service offers advice to forest owners on good forest management practices and practical forestry field training. The constant training of forest owners has been at the core of forest extension. The emphasis on the forest extension service makes the difference with regard to compliance with the law.

Forest owners comply with the legal requirements because they know what they are supposed to do, for example, as regards forest management and the protection of biodiversity. The establishment of forest management associations in every local government has been vital in carrying out forest extension. By contrast, in countries such as Brazil, Bolivia and Costa Rica, forest owners and forestry-related workers have not received enough—if any—training or information on forest management. Particularly in Brazil, a lack of forest sector organization that offers forest extension to conduct forest management has resulted in low compliance with forest laws because the forest workers do not know what they are supposed to do. This lack of a forest extension service has jeopardized the sustainability of the forests. Forest extension service programs are just beginning on a pilot project basis through private initiatives in the Amazon region, but this will not be enough to serve extensive territories like Brazil or other large tropical forest countries.

It should be noted that the need for forest extension services is greater in Brazil where the workers (loggers) are not the forest owners themselves; the loggers are mostly local people hired seasonally and have no background in forestry. There is a risk that a forest owner may train a group of workers and these workers will be gone the next season. Since a high turnover of workers is expected, there is an urgent need to disseminate forest extension services as widely as possible so that the owners' risk will diminish. As discussed above, one way to expand forest extension is to ensure that local organizations promote forest management.

Recommendations:

- 1) Set up a forest extension service unit within the Brazilian government. This unit could establish a systematic program to work in collaboration with private institutions already in action. This is the easiest and most effective step Brazil can take.
- 2) Establish forest management associations in every municipality where forestry is active to provide professional services for forest owners; the existence of a local association or organization is vital to carrying out forest extension. This should work in Brazil because the new administration of forest control is planning to decentralize the power to regional and local governments. However, it is important to be cautious in this respect because decentralization will probably mean that the information transmitted and the effectiveness of outreach will vary from place to place.

2. Negotiation

A consensus-oriented approach consists of negotiation with the forest landowners to encourage them to comply with forestry laws. Whereas in Finland negotiation with the owner has been pivotal to resolve most forest violations, Brazil has relied heavily on the regulatory approach.

In Finland, the consensus-oriented approach to gain the cooperation of forest owners has contributed to sustainable forestry. This approach has been emphasized since 1928 when the first Forest Act was established. Negotiations are possible in Finland because forest owners are aware of the legal requirements, as a result of the government's education efforts.²⁷⁰ Therefore, the forest owners know what is

at stake and what they need to do. The outcomes of negotiations have ranged from planting at the owner's cost to prohibiting further cutting until past infractions were resolved. In contrast, there is no negotiation system in Brazil. Brazil has relied mostly on regulations such as the permit and fine system, which have failed to promote forest management. Negotiation in Brazil would be difficult to implement because it requires a high degree of compliance as a foundation, which is not the case in Brazil. In addition, the present widespread corruption would make it difficult. Realistically, the government is more a reflection of economic power than a neutral entity with ability to act for the public interest. In the case of Brazil, emphasis on negotiation does not make sense because its governmental officers are especially swayed by political power, which serves economic power more than the general public.

II. Factors That Are More Difficult to Change

The different approaches to law enforcement, discussed in the previous sections, affect the degree of compliance. Besides those approaches which can be applied to other countries, there are also factors culturally specific to Finland that cannot be applied to Brazil. These are forest culture, forest ownership, and government legitimacy.

A. Forest Culture

The forests contribute to the wellbeing of people by providing timber as well as recreational and environmental services. Countries that are aware of the value of forests, consider the forest as their source of livelihood, and have a tradition of friendly interaction between people and forests, are said to have 'forest culture.' For instance, the people in Finland have a positive attitude towards the forest. People in Brazil, Bolivia and Costa Rica, on the other hand, tend to have a negative attitude towards forests, and the forest has been seen as a barrier to development.

The forest is strongly connected with the Finnish way of life. Forests have played an important role in shaping Finland's economy and its culture.²⁷¹ Besides the economic benefits, the Finns have enjoyed and respected the nonmaterial values that the forest offers. These include beliefs, myths, and customs related to the forest. In fact, the forest is reflected in every aspect of Finnish culture, including literature, music, and paintings. Moreover, the recreational use of forests has been a part of Finland's traditions. By contrast, 'forest culture' is almost nonexistent in Brazil. As examined earlier, the forest in Brazil has not been considered as an important asset. The lack of forest culture resulted in the conversion of forestlands into other land uses because the forest was not valued. The forest has been considered unfriendly, synonymous with diseases and terrors, and the clearing of forests was regarded as a sign of progress (Pandolfo 1994:204). But this, of course, disregards the perspectives of indigenous peoples and probably also the viewpoints of '*ribeirinho*' riparian communities.

Recommendation:

Increase awareness about forest value in the minds of forest owners, timber companies and the general public in the long term. Forest culture and environmental consciousness cannot be relied upon for results over the short term in Brazil because a society's attitudes do not change quickly.

B. Forest Land Tenure

Land tenure has been a concern for sustainable forest management because property rights are a prerequisite for the application of economic instruments, such as bank credit subsidies or governmental direct subsidies. Finland and Brazil differ in forest ownership structure. Forest ownership in Finland is based on private small holdings and secure forest land tenure. Quite the opposite, Brazilian forest ownership is based on private large holdings and insecure forest land tenure.

In Finland, forestry based on small-scale and private forestry has favoured sustainable forest management. Private ownership resulted from a particular historical situation involving a long tradition of an independent peasantry.²⁷² Thus, Finnish forestry is largely family forestry with secure land tenure. Private forestry has played an important role in the forest industry's timber supply, accounting for 75% of the wood used by the industry. Therefore, the forest policies have been implemented to support private small forest owners. Finland has succeeded in establishing a system of forest law enforcement and economic instruments that do not discriminate against small forest land owners, as occurs in many tropical forest countries. By contrast, insecure land tenure is a barrier to investment in a long-term project such as forest management in Brazil. Unlike Finland, where small holdings averaging 36 ha in size predominate, in Brazil the size of land holdings is large, averaging 1000 ha. Most of these lands are held as a real estate investment.²⁷³ As a result, the clearing of large properties is often motivated by land speculation, rather than promoting forest management. The acquisition of forestlands in the Amazon region is spurred by the weak land tenure system that favours deforestation. The requirement for sustainable forest management is a long-term commitment to the maintenance of the forest. In Brazil, investment in forest land is very risky due to frequent forest land tenure disputes. So, secure forest land tenure is essential to encourage investments in forest management.

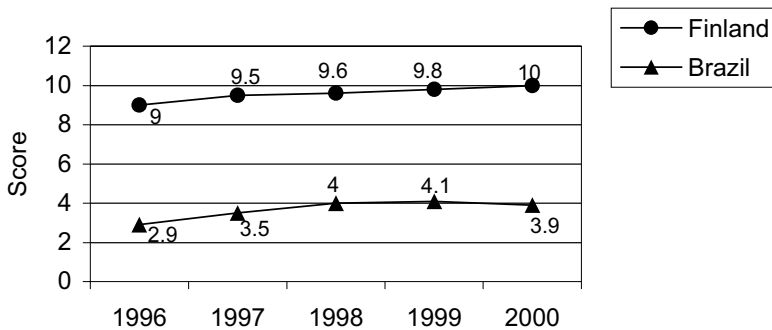
Recommendations:

- 1) Clarify the land tenure system. For example, overlapping land titling is often a problem, causing forest land tenure disputes.
- 2) Establish a system that gives more value to the forest (higher pricing of timber).

C. Legitimacy of the Government

Legitimacy of the government depends on the trust of the population in the governmental policies. Finland and Brazil represent the two extremes with respect to legitimacy of the government. Whereas in Finland the level of legitimacy of public authorities is high, in Brazil it is very low (see Figure 22). Note: scores range from 10 (least corrupt) to 0 (most corrupt).

Figure 22. Corruption perception index of Finland and Brazil from 1996 to 2000



Source: Derived from survey data by Transparency International 1996 to 2000.

The political and economic system in Finland can be characterized as a developed democracy.²⁷⁴ The legitimacy of public authority is high because of the high level of education and the tradition of democratic political culture. As a result, the Finnish people's attitude towards the government and legislation is positive; that is, they comply with the laws and administrative guidelines. The forest owners follow the guidelines because they trust the government. In Finland, it is culturally traditional to obey the laws. Another factor accounting for the high legitimacy is the legal structure that provides for the oversight of administrative organizations at the federal, regional, and local levels.²⁷⁵ By contrast, in Brazil the level of legitimacy of public authority is very low. Corruption has been one of the major reasons for difficulties in enforcing the forest laws. As mentioned earlier, some of the conditions that encourage corruption are the intricate bureaucracy which results in delays in obtaining documents and services, loopholes that allow evasion of both forest inspections and timber transport inspections, and low salaries of the public servants.²⁷⁶ Legitimacy of government cannot be transplanted to Brazil because its political history is uniquely different from that of Finland and other developed countries. However, there are ways to improve the situation.

Recommendations:

- 1) Expand the participation of the society in the government decision-making process; then the legitimacy of a democratic state will increase.
- 2) Establish strict punishments and their enforcement for those public authorities involved in corruption.
- 3) Establish legal oversight of administrative organizations at the federal, regional and local level. This should work in Brazil because the new administrative organization reform emphasizes the need for internal performance audit. Brazil and other developing countries can look to Finland as a model both negatively and positively. Finland went through a stage of ruthless exploitation of its forest resources that severely depleted its forests. Then, the Finnish forest sector responded creatively to the deforestation issue by developing detailed criteria for sustainable management and implementing them in its forest management practices. Brazil and other tropical forest countries must not wait until they have wiped out the forest, but rather implement creative measures immediately.

In conclusion, the current Brazilian approach to the enforcement of forestry laws has been relying on regulations that include permits and sanctions, especially fines, for noncompliance. But this traditional approach has proven ineffective towards achieving sustainable forest management. Successful forest protection and ensuring sustainable forest management will require the use of an adequate mix of regulation, social control and economic instruments.

Nevertheless, that is not the end. The next challenge is to determine how different instruments need to be combined for optimal effect in each particular country. There is no substitute for sound public policy. The governments of tropical forest countries need to find the an mix of social control, regulation, and economic instruments that works in a practical way. As mentioned previously, the compliance and enforcement approach will be successful only if it takes into account the interdependence of the economic, environmental, social, political, and cultural factors that bear on the management of forests.

Endnotes

¹ Economic benefits include timber products and non-timber products.

² Forest management according to the Brazilian law means, "*The administration of the forest for obtaining economical and social benefits, respecting the mechanisms of sustaining the ecosystem which is the object of the management (Decree N° 1.282/94, Article 1º, § 2º).*"

³ 'Frontier forests are the world's remaining large intact natural ecosystems. These forests are—on the whole—relatively undisturbed and big enough to maintain all of their biodiversity, including viable populations of the wide-ranging species associated with each forest type.' (Bryant *et al.* 1997:11).

⁴ Article 225, *caput*. Constituição Da República Federativa Do Brazil.

⁵ Article 225, §1, VII, Constituição Da República Federativa Do Brazil.

⁶ EMBRAPA conducted a field inspection in Paragominas region, State of Pará, in 1995/1996. It reported dozens of violations of rules by forest companies; for instance, not keeping reserves of standing trees as buffers around watercourses. EMBRAPA published a report in 1996 outlining the violations of forest management laws found in the forest (Silva 1997).

⁷ See also: Jornal 'A Crítica Brasil', 30/07/1996, at 6; 'Correio Brasiliense', 19/02/1997; 'Folha de São Paulo', 9/05/1997.

⁸ The first step to revise the law was the promulgation of the Decree 2.788 in 29/09/1998 altering the article 1º, 2º, 3º, 5º and 6º of the Decree 1.282/94 that regulates forest management.

⁹ Agenda 21, Chapter 11, Section B (UNCED 1992a).

¹⁰ These include a wide variety of products such as essential oils, gums, latexes, resins, tannins, steroids, waxes, edible oils, rattans, bamboo, flavourings, spices, pesticides, and dyestuffs (WRI 1985:12). See also Perl *et al.* (1991:v).

¹¹ 'Frontier forests are the world's remaining large intact natural ecosystems. These forests are—on the whole—relatively undisturbed and big enough to maintain all of their biodiversity, including viable populations of the wide-ranging species associated with each forest type.' (Bryant *et al.* 1997:11).

¹² This value represents a 75% increase since 1970; export volumes of roundwood have also increased by 21% since 1970 (Repetto 1988:11).

¹³ The remainder is 14% of sawnwood; less than 7% of pulp and paper and paperboard products; and 35% of wood-based panels (FAO 2001).

¹⁴ FAO 1992, cited in Kramer *et al.* (1995:6). Similar concern is expressed in various reports that 'if the present trend continues, significant—probably catastrophic—decline in tropical forest extent and quality will take place within thirty years, especially in accessible lowland forests.' (Miller *et al.* 1992: 504-5).

¹⁵ Commercial logging primarily for internationally traded species of tropical hardwoods is a cause of deforestation in most tropical forest countries, although it varies from country to country. (Jeffrey 1985:195, 204, 208).

¹⁶ Repetto adds that 'the real problem is outside the forest sector.' (Repetto 1990:38); see also Rietbergen (1993:7).

¹⁷ Water covered 9.9%; agricultural land 8.1%, built area 2.8%, and other areas 11.2% (MAF 1999a).

¹⁸ In many other countries, national forest inventories started to be carried out in the 1950s.

¹⁹ 13% in 1970; 11.5% in 1980; 7.4% in 1990; 9.1% in 1995; 7.4% in 1996; and 7.9% in 1997. METLA (1998a:291).

²⁰ The metal industry accounted for 53%, the chemical industry 9% and other industries 9%. MAF (1999a).

²¹ The Amazon basin or Continental Amazon comprises six states (Acre, Amapá, Amazonas, Pará, Rondônia, and Roraima) with total area of approximately 3.6 million km². However, for regional planning and economic development policy purposes, the government incorporated four more states (Mato Grosso, Tocantins, parts of Maranhão and Goiás) into the Continental Amazon, establishing the so-called Legal Amazon with a total area of about 5.2 million km² (Pandolfo 1994:34). In this case study the term 'the Amazon' refers to the 'Legal Amazon', and these terms are used interchangeably.

²² For instance, one hectare in the Amazon contains up to 230 tree species, compared to 10 to 15 species normally found in a hectare of temperate forests (WRI 1985:12). The overall estimate is that the Amazon rain forest contains about 30 000 plant species (Viana 1997:6), and hosts 2/3 of the world's flora and fauna (Mahar 1989:3).

²³ The contribution of the forest sector to GNP decreased from 6.3% in 1970 and 5.8% in 1974 to 4% in the early 1990s. This decrease is due to a growth of other industrial and service sectors (Kengen 1995:258). However, in recent years, the forest sector, composed of segments such as processed silviculture and extraction from natural forests, wood and furniture, iron and steel, and pulp and paper, was responsible for an estimated annual revenue of US\$53 billion in 1993 to 1995, equivalent to 6.9% of the GNP (Lele *et al.* 2000:13).

²⁴ The total world forest product market represented approximately US\$134 billion in 1998; forest products from Brazil represented 1.7%, which corresponds to US\$2.3 billion (FAO 2000).

²⁵ In 1990 the total export value was US\$1.4 billion; it gradually increased, reaching US\$2.1 billion in 1999, and by 1995 the export value doubled, reaching US\$3.2 billion. In 1996 the export value decreased slightly to US\$2.6 billion; since then it has been growing steadily (FAO 1994:287).

²⁶ See generally INPE/IBAMA/MMA (1998:12-14); see also Mahar (1989:7-9). For detailed impact on the forest see World Bank (1992:8-16). Large-scale mining operations and construction of hydroelectric dams also caused deforestation, but not as many hectares as caused by agriculture and cattle ranching (Mahar 1989:7).

²⁷ The 14% was calculated based on the total deforested area presented by Dennis Mahar by 1988 plus the total deforested area from 1989 to 1997 presented by INPE (Mahar 1989; INPE/IBAMA/MMA 1998:7; Pandolfo 1994:157).

²⁸ Law N° 7.714 of 29 December 1988.

²⁹ Provisional Measure N° 1.511 of 25 July 1996.

³⁰ Presidential Decree N° 1.963 of 25 July 1996.

³¹ Veja, 7 de abril de 1999 [hereinafter *Veja*, 7 de abril de 1999], São Paulo, Brasil, at 112.

³² Other forest stewardship options are: maintaining the entire frontier forest as a protected area; retaining biodiversity, carbon balances, and watershed quality as they are now; establishing special protected areas to preserve biodiversity (Bryant *et al.* 1997:34). Conservation is frequently cited as one alternative to tropical deforestation in which natural ecosystems are protected from human intervention (Anderson 1993:172; Sharma 1992:491). Typical examples are the national parks and forest reserves (Park 1994:139).

³³ Among other forest use practices are hunting, tourism and ecotourism, fishing, and bioprospecting, or the gathering of traditional medicinal and ritual items of value to local communities (Bryant *et al.* 1997; Anderson 1993; Sharma 1992; Park 1994).

³⁴ Sustained yield means a continuous supply of timber from a given area of forest through time (D'Silva and Appanah 1993:3; Elliot 1990:2). Sustained yield means sustainable timber production, which results in the application of forest management practices that would not 'irreversibly reduce the potential of the forest to produce marketable timber; that is, there should be no irreversible loss of soil, soil fertility or genetic potential in the marketable species.' (Poore 1989:5).

³⁵ According to Agenda 21, the goal of sustainability should be a strategy for sustainable management of forest resources, taking into account all forest ecosystems, giving particular attention to human needs for economic and ecological services, conservation of biological diversity and the traditional forest habitats of indigenous people, forest dwellers and local communities (United Nations 1992a:Chapter 11, B., 11.13 (a) and (b)).

³⁶ For instance, the Forestry Code, the Civil Code, the Penal Code, the Code of Civil Procedure, the Code of Penal Procedure, and the Commercial Code. A code is elaborated and voted upon by the national Congress, promulgated by the president, and made effective by law.

³⁷ Self-executing or auto-applicable laws are known as the law of 'concrete effect' and do not depend on regulation by the executive branch. The law that prohibits deforestation in permanent forest reserve areas is an example.

³⁸ Law N° 6.938/81, Article 2.

³⁹ Law N° 9.605 of February 1998 [hereinafter Law 9.605/98].

⁴⁰ Law 9.605/98, Article 75. In March 1999, US\$1 corresponded to R\$1.6 (1.6 Brazilian Reais). Other administrative penalties according to Article 72 of Law 9.605/98 include: (1) warning; (2) single fine; (3) daily fine; (4) seizure of animals, products and by-products of fauna and flora, instruments, supplies, equipment or vehicles of any nature used in violation; (5) destruction or immobilization of the product; (6) suspension from selling or manufacturing the product; (7) embargo on works or activity; (8) demolition of the works; (9) partial or total suspension of activities; and (10) restrictions on rights. The restrictions on rights include: (1) suspension of registration,

license or authorization; (2) cancellation of registration, license or authorization; (3) loss or restriction of tax incentives and benefits; (4) loss or suspension of participation in lines of credit at official credit establishments; and (5) prohibition on contracting with the government for a period of up to three years (Law 9.605/98, Article 72, Paragraph 8).

⁴¹ Alternative land use means conversion of forests to agriculture and other purposes, such as cattle ranching. These uses generally involve clearcutting of natural vegetation.

⁴² Forestry Code, Article 11, Article 12, Article 19, Article 20 and Article 21.

⁴³ Forestry Code, Article 1°. The article establishes that 'the forests and other forms of natural vegetation are the common interest assets.'

⁴⁴ Forest-based industries refers to industries that consume logs and charcoal, such as the pulp and paper industries and iron ore smelters.

⁴⁵ Article 15 of the Forestry Code establishes that '*Exploitation of the primitive forests of the Amazon basin is forbidden without the necessary safeguards; they may only be exploited in accordance with technical plans and proper management as established by law, to be enacted after the period of one year.*' (emphasis added).

⁴⁶ Administrative Decree N° 10 of 1975 was the first legal instrument to use the term 'sustainable forest management'; other major administrative acts which dealt with forest management were Normative Instruction N° 001 of 1980; Administrative Decree N° 302-P of 1984; and Normative Instruction 80 of 1991.

⁴⁷ Provisional Measure N° 21 of 6 December 1988.

⁴⁸ Law N° 7.803 of 18 July 1989.

⁴⁹ Decree N° 97.628 of 10 April 1989.

⁵⁰ Forestry Code, Article 44.

⁵¹ Provisional Measure N° 1.511 of 25 July 1996.

⁵² Decree N° 1.282 of 19 October 1994.

⁵³ The National Environmental Management System (SISNAMA) comprises the National Council for the Environment (Conselho Nacional do Meio Ambiente-CONAMA) formed by representatives of the states, unions, NGOs, and experts; the Ministry of the Environment and Legal Amazonia (MMA); and an executive agency (IBAMA) linked to MMA; other public agencies concerned with environmental matters; and state and municipal environmental agencies (Huber *et al.* 1998:44).

⁵⁴ Law N° 7.735 of 22 February 1989 [hereinafter Law 7.735/89].

⁵⁵ Provisional Measure N° 09 of 16 October 1992.

⁵⁶ Law N° 7.735/89.

⁵⁷ The federal executive agencies are the Special Secretariat of the Environment, the Brazilian Institute of Forestry Development, the Superintendency of Fisheries Development (SUDEPE), and the Superintendency of Rubber (SUDHEVEA) (Law N° 7.735/89).

⁵⁸ Constituição da Republica Federativa do Brazil, Article 24, VI.

⁵⁹ IBAMA 1997^a:6. The amalgamated agencies are the Special Secretariat of the Environment, the Brazilian Institute of Forestry Development, the Superintendency of Fisheries Development (SUDEPE), and the Superintendency of Rubber (SUDHEVEA) (Law N° 7.735/89).

⁶⁰ For instance, the states of Amazonas, Paraná and Minas Gerais.

⁶¹ Portaria N° 486/86, Article 2.

⁶² This field audit was carried out in the Paragominas region of Pará state, where the majority of logging in the Amazon is taking place (Silva 1997:5).

⁶³ Pursuant to *Portaria* N° 048/95, Anexo I, 4.3, the minimum diameter is 45 cm.

⁶⁴ A total of 18 forest management projects were visited, representing a total of 514 000 m³ of annual consumption. Considering that the average intensity of extraction is 40 m³ per ha in a cycle of 30 years, the logging area needed to produce this yield would be 385 000 ha. However, the total area designated under forest management of these projects was 127 000 ha. Therefore, there is a deficit of approximately 258 000 ha (Silva 1997:10).

⁶⁵ Commercial timber volume presented in forest inventories varies from 37 m³ per ha to 114 m³ per ha; about 68% of these inventories present volumes above 70 m³ per ha, while 21% of them present volumes above 90 m³ per ha. A more realistic average volume for the Paragominas region is probably close to 40 m³ per ha (Silva 1997:10).

⁶⁶ A prospecting forest inventory is a prerequisite for a logging map which marks those tree species with potential for extraction (Silva 1997:11).

⁶⁷ Regarding general forest monitoring, although 44% of the projects had established permanent parcels, only 19% were measured, and neither measurements nor projects have been analyzed (Silva 1997:11).

⁶⁸ Law 4.771/65, Decree 1.282/94 revoked by Decree 2.788/98, and Administrative Decree 048/95 revoked by Normative Instructions N° 4, N° 5, and N° 6 of December 28, 1998; which were partially revoked by Normative Instruction N° 7, of April 27, 1999.

⁶⁹ For the purpose of this study, a clearcutting permit means any permit to convert forestland to agriculture, cattle ranching, or any other non-forest land use. The Brazilian government often uses the term 'deforestation permit' as a synonym for 'clearcutting permit'.

⁷⁰ Normative Instruction N° 7 of 27 April 1999 [hereinafter IN 7/99], Article 1, I.

⁷¹ IN 7/99, Article 1, II.

⁷² *Id.*, Article 1, III.

⁷³ *Id.*, Article 1, IV.

⁷⁴ *Id.*, Article 1.

⁷⁵ *Id.*, Article 1, II.

⁷⁶ Provisional Measure N° 1.885-38 of 29/06/1999.

⁷⁷ IN 7/99, Article 1, Paragraph 1°.

⁷⁸ IN 7/99, Article 1.

⁷⁹ The analysis itself takes about 15 days, but the delay is caused by waiting for documentation, office errors in processing the petition, and delay in the prior field inspection.

⁸⁰ It is the Working Group Commission of the Ministry of Environment that discusses and proposes plans for the forestry sector.

⁸¹ IBAMA SUPES/Pará, Technical Division, list of 1998 clearcutting permit data.

⁸² This study analyzed a total of 31 projects registered with IBAMA/SUPES/PA for the period between 1995 and 1996.

⁸³ Forest management project N° 1 and project N° 2, respectively.

⁸⁴ Forest management projects N° 3, N° 4, and N° 5.

⁸⁵ Forest management project N° 7.

⁸⁶ Forest management project N° 6.

⁸⁷ Law N° 7.803 of 18 July 1989 established that the area subject to forest management must be registered with a notary public. That means any area covered by a forest management plan cannot be converted to other land uses.

⁸⁸ Law 9.605/98. The penalties under Article 72 are listed at Footnote 5. Related prison sentences vary from three months to five years, according to the seriousness of the infraction (*Id.*, Article 38 through Article 53).

⁸⁹ Law N° 6.938/81, Article 14.

⁹⁰ *Portaria* IBAMA N° 60, of August 23, 1995; revoked by *Portaria* IBAMA N° 44/97, Article 6, § 2. The currency rate is based on the United Nations Operational Rates of Exchange. In 1994 US\$1 corresponded to R\$0.92 (0.92 Brazilian Real); 1995 (US\$1=R\$0.9); 1996 (US\$1=R\$1.01); 1997 (US\$1=R\$1.08); and, 1998 (US\$1=R\$1.16).

⁹¹ *Portaria* IBDF N° 267-P/88, revoked by *Portaria Normativa* N° 42/92; *Portaria* IBAMA N° 59-N/94; e *Portaria* N° 60/95.

⁹² Telephone Interview with Antônio Carlos Hummel, IBAMA/SUPES/AM (December 30, 1998).

⁹³ AC 94.01.35991/GO, TRF-1°R, 3° Turma, DJ 11/05/95, p. 28.106); AC 94.01.34999/MG, TRF-1°R, 3° Turma, DJ 20/03/95, p. 14.131; AC 93.01.06116/GO, TRF-1°R, 3° Turma, DJ 19/06/95, p. 41.447.

⁹⁴ Law 9.605/98, Article 75.

⁹⁵ Law 9.605/98, Article 6, I, II, III.

⁹⁶ *Portaria* IBAMA N° 44/97, Article 7, *Parágrafo único*.

⁹⁷ Violators make their first administrative appeal to the President of IBAMA, then to the Ministry of the Environment.

⁹⁸ Telephone Interview with Antônio Carlos Hummel, IBAMA/SUPES/AM (December 30, 1998).

⁹⁹ Tribunal Decision of the 4^o group of TRF/GO, 1^o Region, 18/02/97. (*Acórdão da 4^o Turma do TRF/GO, 1^o Região, 18/02/97*)

¹⁰⁰ Antônio Carlos Hummel, *supra* note 63.

¹⁰¹ IBAMA/SUPES/Pará data 1998.

¹⁰² An imbalance in personnel distribution among other agencies has also been difficult to resolve. In fact, attempts to change other governmental agencies produced judicial orders against the implementation of such changes (IBAMA 1997a).

¹⁰³ These units include the Regional Superintendencies (*Superintendências Estaduais*—SUPES), the Regional Offices (*Escritórios Regionais*—ERs) and the Control and Inspection Centres (*Postos de Controle e Fiscalização*—POCOFs).

¹⁰⁴ Normative Instruction IBDF N° 001/80. This law created the forestry fund called '*Conta Recursos Especiais a Aplicar - Optantes de Reposição Florestal*' (*Fundo Florestal*).

¹⁰⁵ IBAMA's organizational restructuring includes defining an institutional mission for IBAMA, describing a functional organizational model of the agency, establishing strategies to implement this model's objectives, creating a system to monitor the agency's performance, and implementing operational procedures between divisions to make paperwork flow faster (SBS 1995:8).

¹⁰⁶ Law N° 5.371 of 15 December 1967, Article 1, VII; and Decree N° 563, of 6 August 1992, Article 2, IX.

¹⁰⁷ Interview with Francisco Potiguara, Chief of Canindé Local Unit, FUNAI/Pará, in Belém, Pará, Brazil (December 11, 1997).

¹⁰⁸ *Id.*

¹⁰⁹ *Portaria 486/86*, Article 2 establishes that '*the logging permit request constitutes an indispensable initial instrument to any form of forest exploitation; when it pertains to primitive forest, a sustainable forest management plan is required.*'

¹¹⁰ 'Approximately 40% of the plantations have been established to provide raw material for the pulp and paper industry, 25% for wood-based products from the forest, and 35% for charcoal production to be used by the iron and steel industry.' (Kengen 1999:257).

¹¹¹ The Fiscal Incentive Law, enacted in 1966, provided incentives for planting fast growing species such as eucalyptus, pines, araucaria pine, fruit trees and palms, and others—especially in the southern states of Brazil (Kengen 1999:257).

¹¹² The major legal instruments are: Law 5.106/66; Decree 59.380/66; Decree 62.561/68; Administrative Decree 201/68; Decree 64.424/69; Administrative Decree 1.099/69; Decree-law 1.087/70; Decree-law 1.134/70; Decree-law 1.140/70; Decree 68.565/71; Decree-law 1.307/74.

¹¹³ Decree-law 1.106/70; Decree-law 1.376/74.

¹¹⁴ See also Law 5.106/66 and Decree-law 1.376/74.

¹¹⁵ 'During the period 1974-1982, the average annual plantation area was about 0.4 million ha. Financial problems and misuse of incentive programs led to a reduction in such programs by the government in 1983, when the average annual planted area dropped to 0.2 million ha.' As a result, private companies and large landowners established the majority of plantations (90%) during the period before 1983 (Kengen 1999:257).

¹¹⁶ Decree-law 2.304, of 11/21/86, Decree 93.607, of 11/21/86, Decree 94.766, of 8/11/87.

¹¹⁷ Law 7.714, of 12/29/88.

¹¹⁸ Decree 97.628, of 4/10/89.

¹¹⁹ Law N° 9.393 of 12 December 1996, Article 10, § 1, IV and VI; § 5.

¹²⁰ Law N° 7.827 of 27 September 1989.

¹²¹ Interview with Paulo Amaral, Director of the Instituto do Homem e Meio Ambiente da Amazônia, in Belém, Pará, Brazil (March 8, 1997).

¹²² Interview with José D'Avila, Banco da Amazônia, in Belém, Pará, Brazil (August 22, 1996).

¹²³ *Id.*

¹²⁴ Interview with Johan Zweede, President of Tropical Forest Foundation, in Belém, Pará, Brazil (September 10, 1996)

¹²⁵ *FSC Notícias*, available at <http://www.fsc.org.br/menu.htm> (30 Oct. 2000).

¹²⁶ The earliest verifiable forest management in the Amazon began in the 1960s. However, forest management practices did not become widespread until pilot projects were developed at the end of the 1980s. At that time, the 'Instituto do Homem e Meio Ambiente da Amazônia' (IMAZON) took the first steps; later, other institutions began to replicate IMAZON's model, which demonstrated the feasibility of forest management (Barros and Verissimo 1996:47-74).

¹²⁷ Non-timber forest products are, for example, palm heart, Brazil nut, latex, etc.

¹²⁸ *Status of National and Regional Certification Initiatives*. Available at <http://www.fsc.coax.org/html/status2.htm> (30 Oct. 2000).

¹²⁹ *Id.*

¹³⁰ Social institutions included in this group were: the 'Federação de Órgãos para Assistência Social e Educacional' (FASE), the 'Confederation of Indigenous Organizations of Amazônia' (COIAB), the 'Instituto Socio-Ambiental' (ISA), the 'Instituto para o Desenvolvimento, Meio Ambiente e Paz' (Vita Civilis), the 'Centro de Trabalhadores da Amazônia' (CTA), and the 'Federação Nacional dos Trabalhadores da Construção e da Madeira da CUT' (FNTICM). Environmental organizations were: the Friends of the Earth Brazil, the Worldwide Fund for Nature (WWF Brazil), the APREMAVI SOS Mata Atlantica, the Institute of Man and the Environment of Amazonia (Imazon), the 'Fundação Pro-Natureza' (FUNATURA), and the 'Associação Mineira de Defesa Ambiental' (AMDA). Participants from the industry sector were: the Brazilian Society of Silviculture (SBS), the 'Associação das Indústrias Exportadoras de Madeiras do Estado do Pará' (AIMEX), the 'Associação Nacional dos Fabricantes de Papel e Celulose' (ANFPC), the 'Associação Brasileira de Florestas Renováveis' (ABRACAVE), the 'Instituto de Pesquisa Tecnológica' (IPT), and the 'Federação das Associações de Recuperação Florestal do Estado de São Paulo' (FARESP) (Filho 1998:55).

¹³¹ The observers included: the Ministry of the Environment and the Legal Amazon (MMA), the 'Escola Superior de Agricultura Luis de Queiros' (ESALQ), the 'Instituto de Manejo e Certificação Florestal e Agrícola (IMAFLOA), and one ex-member of the FSC Executive Council (Filho 1998:55).

¹³² Plantation forests consisted mostly of teak, eucalyptus and pine plantations in the central west, southwest and southern regions of Brazil (available at <http://www.fsc.org.br/ingles.htm>, cited 30 Oct. 2000).

¹³³ *Id.*

¹³⁴ *Id.*

¹³⁵ *Id.*

¹³⁶ The first timber company to be certified in the Amazon experienced such an improvement in their relationship with the forest authority (Camino 1998:98).

¹³⁷ *Grupo de Compradores*, available at <http://www.fsc.org.br/menu.htm> (30 Oct. 2000).

¹³⁸ The major European demand comes from The Netherlands, England, Belgium, Sweden, Denmark, Germany, Switzerland and France (Camino 1998:99).

¹³⁹ *FSC Notícias*, *supra* note 90.

¹⁴⁰ *Florestas certificadas pelo FSC no Brasil*. http://www.fsc.org.br/florest_certif.htm (30 Oct. 2000)

¹⁴¹ *FSC Notícias*, *supra* note 90.

¹⁴² *FSC Notícias*, *supra* note 90.

¹⁴³ *Grupo de Compradores*, *supra* note 90. Internationally, there are 12 such groups of buyers of certified timber but most of them are based in developed countries (World Bank 1999:2).

¹⁴⁴ Interview with Johan Zweede, President of Tropical Forest Foundation, in Belém, Pará, Brazil (September 10, 1996).

¹⁴⁵ *Id.*

¹⁴⁶ Two others barriers: agriculture and cattle ranching are more profitable than forest management over the short term, and the government has put almost no resources into effective control of illegal logging (Barreto *et al.* 1997:13-21).

¹⁴⁷ The Tropical Forest Foundation is an international non-profit organization dedicated to conserving tropical forests through sustainable forestry.

¹⁴⁸ *Grant to Fund Training for Latin Foresters*, 3/1/98 Wood Technology 15, Vol. 125, No. 2.

¹⁴⁹ *Id.*

¹⁵⁰ *Id.*

¹⁵¹ WWF's video covers the course of the forest management pilot project carried out by the Institute of Man and the Environment of Amazonia (IMAZON) in Paragominas, in the state of Pará.

¹⁵² Smart Wood, *Programa de Certificação Florestal*, available at <http://www.imaflora.org.br/Programas/pcf.htm> (14 Nov. 2000). Details of the programs are available at the same web site.

¹⁵³ Law N° 4.504 of 30 November 1964 [hereinafter Law 4.504/64].

¹⁵⁴ Law N° 6.969, of 10 December 1981, Article 1; See Law 4.504/64, Article 98.

¹⁵⁵ Public lands are divided among federal conservation area, state conservation areas, indigenous reserves and military areas (World Bank 1992:284).

¹⁵⁶ 'Unallocated lands' (*terras devolutas*) are in essence 'no-man's-land' because they are those lands currently unallocated either to the public or the private sector (Law N° 9.760 of 5 September 1946, Article 5).

¹⁵⁷ It should be noted that any illegal logging takes place in unallocated lands or indigenous reserve areas.

¹⁵⁸ Small farms accounted for about 30% of deforestation activity, while 70% of the deforestation took place at the hands of ranchers (Fearnside 1993:544).

¹⁵⁹ Law 4.504/64, Article 10. See also Pandolfo (1994:113).

¹⁶⁰ Transparency International (TI) is a non-governmental organization based in Berlin. Its 'Corruption Perception Index' (CPI) is a survey of businesspeople, risk analysts and the general public based on the degree to which they perceive corruption to exist among public officials and politicians within a given country. Scores range from 10 (least corrupt) down to 0 (most corrupt).

¹⁶¹ The restrictions apply to cultivated fields and plantations, around people's home, and to protected areas such as nature reserves (Ministry of the Environment 1999:2).

¹⁶² The Nature Conservation Act 1096/1996, Chapter 1, Section 1.

¹⁶³ Ma 601 Metsäläki 3.9.1886.

¹⁶⁴ The Forest Act 1093 of 12 December 1996 (Metsäläki 1093/1996)[hereinafter Forest Act 1093/1996], Chapter 2, Section 5.

¹⁶⁵ Forest Act 1093/1996, Chapter 1, General provisions, Section 1.

¹⁶⁶ This was a prominent feature of the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992 and the Ministerial Conference on the Protection of Forests in Europe held in Helsinki in 1993.

¹⁶⁷ Forest Act 1093/1996, Chapter 3, Section 10.

¹⁶⁸ *Id.* Section 11.

¹⁶⁹ There are 13 Regional Forestry Centres: 1) Coast; 2) Southwest Finland; 3) Häme-Uusimaa; 4) Kymi; 5) Pirkanmaa; 6) South Savo; 7) South Ostrobothnia; 8) Central Finland; 9) North Savo; 10) North Karelia; 11) Kainuu; 12) Northern Ostrobothnia; and 13) Lapland.

¹⁷⁰ The Forest and Park Service is in charge of managing state-owned forestlands, and protected areas such as nature reserve, wilderness and conservation areas. It also operates recreation services such as operation of information centres and offers various kinds of services such as accommodation, hiking, and fishing licenses (MAF

1999b:22). The Finnish Forest Research Institute (METLA) was founded in 1917 with its headquarters in Helsinki. It is divided into eight regional research stations. Its objective is to solve forest-related problems through scientific research (METLA 1998b). Detailed information about METLA is available at <http://www.metla.fi>

¹⁷¹ The other responsibilities are to: draw up multiple-use, landscape and environmental plans; develop economic activities based on forestry; provide advice on forestry planning and extension for forest owners; advise on guidelines on governmental support programs for private forestry; build forest roads and renovate ditching; and maintain biological diversity of forests (MAF 1999a).

¹⁷² The independent group intervenes in decisions such as giving financial support for certain types of work or owners (Forestry Centre of North Karelia 1999).

¹⁷³ The mass media includes radio, TV, newspaper, internet, periodicals, pamphlets, etc.

¹⁷⁴ Klaus Yrjönen, Biodiversity Project Chief at the Forestry Development Centre Tapio, interview on 8 October 1999, Helsinki.

¹⁷⁵ Harri Hänninen, Senior Researcher at the Finnish Forest Research Institute, interview on 21 September 1999, Helsinki.

¹⁷⁶ The uniform report consists of information on: felling; establishing a new tree stand; tending of young forest; forest road construction; and forest ditching maintenance (FDC Tapio 1999c).

¹⁷⁷ Ari Niiranen, Head of the North Karelia Forestry Centre, interview on 30 September 1999, Joensuu, Finland.

¹⁷⁸ Every year, the Forestry Centres and the Forest Management Associations draw up 14 000 to 15 000 management plans for private owners in Finland. The procedure for preparing forest management plans is based upon a sophisticated computer program that allows the planner to make specific prescriptions, such as the time of cutting and the need and type of regeneration. The program simulates the growth of each forest compartment to determine cuttings for the next 10-year period, according to the field data characteristics. It also includes financial calculations that enable the planner to estimate the value of the forest estate and to apply economic calculations to the forest activities of the forest owners. Once the basic forest management plan is developed, the planner works in cooperation with the forest owners to include their proposals for forest activities. This discussion encourages the forest owners and the agents to achieve a common understanding by evaluating possible best solutions for the forest owner and the forests' sustainability (Nikunen and Ranta 1991:286-287).

¹⁷⁹ The currency exchange rate in October 1999: US\$1 corresponded to FIM 5.6 (5.6 Finnish Marks).

¹⁸⁰ According to the law, the habitats of special importance to forest diversity are: 1) the immediate surroundings of springs, streams, wet hollows in the permanent beds of streams, and small pools; 2) herb-rich and grassy hardwood-spruce swamps, ferny hardwood-spruce swamps, eutrophic paludal hardwood spruce-swamps, and eutrophic fens located to the South of the Province of Lapland; 3) fertile patches of herb-rich forest; 4) heathland forest islets in undrained wetlands; 5) gorges and ravines; 6) steep bluffs and the underlying forest; and 7) sandy soils, exposed bedrock, boulder fields, wetlands with sparse tree stand and flood meadows that are less productive than nutrient-poor heathland forests (Forest Act 1093/1996, Chapter 3, Section 10).

¹⁸¹ Forest Act 1093/1996, Chapter 5, Section 14.

¹⁸² Harri Hänninen, Senior Researcher at the Finnish Forest Research Institute, interview on 21 September 1999, Helsinki.

¹⁸³ *Id.*

¹⁸⁴ Law N° 1224 of 30 December 1998.

¹⁸⁵ The other sanctions were that 1) the sale of timber from the excluded forests needed a special authorization from the supervising forestry authorities; and, 2) the offender of mismanaged stand had to restore it to a productive state at the landowner's expense (Hänninen 1999:242).

¹⁸⁶ Ari Niiranen, Head of the North Karelia Forestry Centre, interview on 30 September 1999, Joensuu, Finland.

¹⁸⁷ Forest Act 1093/1996, Chapter 5, Section 20, Paragraphs 1 and 2.

¹⁸⁸ *Id.* Paragraph 3.

¹⁸⁹ Niiranen, *supra note 26*.

¹⁹⁰ Forest Act 1093/1996, Chapter 3, Section 18.

¹⁹¹ Pentti Lähteenoja, Senior Adviser of the Ministry of Agriculture and Forestry, interview on 6 October 1999, Helsinki.

¹⁹² Owner #1: 15-day fine, total of 300 FIM (US\$53); Owner #2: 6-day fine, total of 528 FIM (US\$94).

¹⁹³ Forest Act 1093/1996, Chapter 2, Section 5, Paragraphs 1 and 3; Section 8; and Chapter 4, Section 12.

¹⁹⁴ *Id.* Chapter 3, Section 10, Paragraph 3.

¹⁹⁵ *Id.* Chapter 2, Section 5, Paragraph 2.

¹⁹⁶ *Id.* Chapter 4, Section 12, Paragraphs 1 and 3.

¹⁹⁷ *Id.* Chapter 4, Section 13.

¹⁹⁸ *Id.* Chapter 5, Section 18, Paragraph 3.

¹⁹⁹ Lähteenoja, *supra note 31*.

²⁰⁰ Forest Act 1093/1996, Chapter 5, Section 22, Paragraph 1.

²⁰¹ *Id.* Section 19, Paragraph 1.

²⁰² The author also mentions that 'The local Forest Management Associations, too, are going through a period of streamlining, with staff dismissals almost as voluminous as the regional Forestry Centres.' (Hänninen 1999)

²⁰³ Act on the Financing of Sustainable Forestry (*Laki kestävän metsätalouden rahoituksesta*) N° 1094 of 12 December 1996 [hereinafter Act on the Financing of Sustainable Forestry 1094/1996].

²⁰⁴ *Id.* Chapter 2, Section 5.

²⁰⁵ *Id.* Chapter 2, Section 9. More than FIM 1 billion is invested every year in forest regeneration, young stand management, fertilizing, ditching renovation, and forest road construction. The forest owners themselves finance about three-quarters of this. State subsidies cover the rest. (MAF 1999b:12).

²⁰⁶ Act on the Financing of Sustainable Forestry 1094/1996, Chapter 1, Section 3 and Chapter 2, Section 9.

²⁰⁷ For taxation purposes, the growth sites are divided into five site classes, which take into consideration the structural variation of the growing stock of each site class (Riihinen 1981:94).

²⁰⁸ For the 1980 forest tax alteration, see also Riihinen (1981:94).

²⁰⁹ See also Niiranen, *supra note 26*.

²¹⁰ Kalle Määttä, Professor of law at Joensuu University, interview on 29 September 1999, Joensuu, Finland.

²¹¹ The Nordic countries are Finland, Sweden and Norway.

²¹² The National Working Group on Forest Certification Standard is composed of representatives of forest owners, forest industries, the Saami people (natives of Lapland), and environmental organizations.

²¹³ The testing regions were Pirkanmaa, North Karelia and Lapland.

²¹⁴ The training emphasized the implications of certification criteria for daily work, with special attention to natural environment and bodies of water such as small rivers and lakes.

²¹⁵ The main activities of the Finnish Forest Certification Project were: '1) Refinement of the interpretation of the Finnish certification standard and its auditing procedures; 2) development of rules for group certification; 3) development of procedures for the verification of the chain-of-custody; 4) building up institutional capability for forest certification; and 5) dissemination of information and development of cooperation at international and national levels.' (Indufor Oy. 1998a:2).

²¹⁶ The members of the Forest Certification Council are: The Central Union of Agricultural Producers and Forest Owners (MTK); the Central Union of Swedish Speaking Agricultural Producers and Forest Owners; the Finnish Forest and Park Service; the Finnish Forest Industries Federation; the Finnish 4H Federation; the Finnish Sawmills Association; the Organic Farming Association; the Timber Truck Transport Entrepreneurs; the Trade Association of Finnish Forestry and Earth Moving Contractors; the Union of Academic Foresters (METO); and the Wood and Allied Workers' Union (Indufor Oy 1999a:1).

²¹⁷ The tasks of the Council include: to promote forest certification in Finland; to guide implementation of the FFCS; to develop certification practices; to revise the elements of the system based on experience; and to nominate an Appeals Panel ((Indufor Oy 1999a:2).

²¹⁸ The tasks of the Regional Certification Committee include: organizing internal data collection; promoting certification in the region; proposing improvements in forest management required by the certification criteria; and determining the responsibilities of each stakeholder ((Indufor Oy 1999a:2).

²¹⁹ Note that criterion 1 is same for all three aspects. The 18 ecological criteria are: 1) sustainable forest management target programme; 2) increased prescribed burning; 3) preservation of key biotopes; 4) minimum proportion of old-growth forests; 5) monitoring of forest ecosystem management; 6) marking of special habitats on forest management plans; 7) preservation value of protected habitats is not endangered; 8) known habitats of endangered species are safeguarded; 9) retention trees are left on regeneration areas; 10) domestic tree species are used in forestry; 11) environmental impact assessment of forest road plans; 12) no first-time drainage is carried out; 13) water protection plan in drainage; 14) buffer zones for waterways and small bodies of water; 15) target criteria for soil scarification; 16) restrictions on pesticide use; 17) restrictions on fertilizer use; and 18) preservation of valuable landscapes complexities.

²²⁰ The 12 economic criteria are: 1) sustainable forest management target programme; 2) silvicultural recommendations; 3) forest management plan coverage; 4) accomplishment of seedling stands; 5) promotion of first thinnings; 6) increase in biological control of root rot and spongy saprot; 7) total drain of the growing stock is less than increment; 8) forest regeneration is taken care of; 9) monitoring of forest harvesting damage and forest damage; 10) master plan for forest road network; 11)

target criteria for ditch cleaning and supplementary ditching; and 12) avoidance of forest harvesting damage.

²²¹ The nine social aspects are: 1) sustainable forest management target programme; 2) supplementary training of staff; 3) adequate instructions to employees; 4) training and extension of forest owners; 5) adherence to statutory obligations; 6) responsible persons' rights are safeguarded; 7) preservation of ancient monuments; 8) safeguarding of the Saami people's traditional means of livelihood and culture; and 9) integration of reindeer husbandry and forestry.

²²² 'Chain of custody' is a procedure in which the origin of the wood used in a product can be indicated in a verifiable way.

²²³ They are principally interested in environmental criteria such as preservation of key biotopes, old growth forests, protected habitats, and valuable landscape, marking of special habitats, safeguarding habitats of endangered species, and leaving buffer zones for waterways and small bodies of water, among others.

²²⁴ Finnish Forest Certification System, *International Compatibility and Product Labels*, available at <http://www.smy.fi/certification/eng/esittely/jarjestelma/sertikv_e.htm>

²²⁵ Finnish Forest Certification System, *Application of the System at Various Alternative Levels*, available at <http://www.smy.fi/certification/eng/esittely/standardit/toteutustasot_e.htm>

²²⁶ Regional group certification costs 10 times less than that of individual (average 40-ha forest holding) forest certification (Ingram and Enroth 1999:291).

²²⁷ The first seven regions are the Lappi, Pohjois-Karjala; Etelä-Savo, Keski-Suomi, Etelä-Pohjanmaa, Pirkanmaa, and Lounais-Suomi. (Indufor Oy 1999b:1).

²²⁸ The large-scale forest owners include the state, Metsäliitto Group, the Stora Enso Oy, and the UPM-Kymmene.

²²⁹ The five regions are: Etelä-Savo (South Savo region), Pohjois-Karjala (North Karelia), Pirkanmaa, Etelä-Pohjanmaa (Southern Ostrobothnia), and Lounais-Suomi (Southwest region). (MTK 1999f)

²³⁰ The aim of the Pan-European Forest Certification scheme is to establish an internationally credible forest certification framework for forest certification schemes and initiatives in European countries, which will facilitate mutual recognition of schemes (MTK 2000).

²³¹ Representative works include the novel 'The Seven Brothers', written in the late 19th century by Aleksis Kivi, Arto Paasilinna, and Veikko Huovinen, paintings by Akseli Gallen-Kallela, Pekka Halonen, and Eero Järnefelt, music by Jean Sibelius, photographs by I.K. Inha and architecture by Eliel Saarinen and Alvar Aalto (Reunala 1999:236-7).

²³² Private ownership refers to individual forest owners who are not integrated with wood processing companies. These private forest owners are referred to as non-industrial private forests (NIFP) in Europe, but for simplicity they are referred to here simply as 'private forest owners.' (METLA 1998:46).

²³³ Most of the government-owned forests are in the northern and eastern part of the country. Due to their geographical location and poorer soils, only one-third of the forests are for commercial use. The remaining area is for conservation (MAF 1999b:21).

²³⁴ Other owners include municipalities, parishes, cooperatives, etc.

²³⁵ Available at <http://www.vpm.com/wfi/wf_finland.htm>. See also MAF (1999c:30).

²³⁶ See also Hänninen, *supra* note 15.

²³⁷ In 1990 36% of forest owners were pensioners; 32%, farmers; 27%, wage and salary earners; and 5%, entrepreneurs. Projections for 2010 anticipate a significant decline in the farmers' share (16%) and an increase in the pensioners (48%) and wage and salary earners (31%) (MTK 1999c:7).

²³⁸ 'Farmers are forest owners, whose main source of livelihood comes from agricultural production or forestry; other forest owners are classified as non-farmers.' (Ripatti 1996:27).

²³⁹ Hänninen, *supra* note 15.

²⁴⁰ *Id.*

²⁴¹ *Id.*

²⁴² 'The harvesting chain includes a forwarder for hauling the timber to the road side in readiness for long distance transportation.' (Rannikko 1999:226).

²⁴³ The pace of fragmentation process has accelerated since 1917 when Finland became an independent country. In the first Agricultural Census of 1929-30, the number of holdings was 230 000. This increased to 330 000 in 1959 and to more than 440 000 in 1994. This dramatic increase was due to the government settlement policy launched after the Second World War (Ripatti 1996:7-8).

²⁴⁴ The first Forest Management Association Act was passed in 1950. The New Act on Forest Management Associations was enacted in 1999.

²⁴⁵ The local associations have approximately 1600 forestry professionals, including 600 forest workers.

²⁴⁶ The regional associations have approximately 45 employees.

²⁴⁷ The forest training includes forest management, forest damage assessments, training and guidance for forest owners, and forest tax services.

²⁴⁸ The forest management services include regeneration, tending of young stands, remedial ditching and forestland road construction, fertilizing, and the supplying of plants, seeds, and other materials.

²⁴⁹ The timber sales services include timber sales planning, the supervision of logging, logging services, and the power of attorney sales.

²⁵⁰ The fee is about FIM 100 per hectare per year.

²⁵¹ Once the forest owner pays the fee, he or she is automatically registered as a member of the local forest management association. In the case that the forest owner does not want to be a member, the owner has to notify the association in writing. Only members have the opportunity to vote in council elections.

²⁵² Ari Ekroos, Professor of Law at Helsinki University of Technology, interview on 17 September 1999, Espoo, Finland.

²⁵³ Tapani Veistola, Natura 2000 Coordinator at the Finnish Association for Nature Conservation, personal interview, 7 October 1999, Helsinki.

²⁵⁴ See Chapter II, Part I, Section C, Sub-section 3.

²⁵⁵ See Chapter III, Part I, Section C, Sub-section 2.

²⁵⁶ See Chapter II, Part I, Section B, Sub-section 2. b).

²⁵⁷ See Chapter III, Part I, Section B, Sub-section 3.

²⁵⁸ See Chapter II, Part I, Section B, Sub-section 2. c).

²⁵⁹ See Chapter III, Part I, Section C, Sub-section 4.

²⁶⁰ See Chapter II, Part I, Section B, Sub-section 5. b).

²⁶¹ See Chapter III, Part I, Section D. 1.

²⁶² See Chapter II, Part I, Section C, Sub-section 4.

- ²⁶³ See Chapter II, Part I, Section C, Sub-section 4. c).
- ²⁶⁴ See Chapter III, Part I, Section B, Sub-section 1.
- ²⁶⁵ See Chapter III, Part I, Section B, Sub-section 1.
- ²⁶⁶ See Chapter II, Part I, Section B, Sub-section 2 a).
- ²⁶⁷ Act on the Financing of Sustainable Forestry 1094/1996, Chapter 1, Section 1.
- ²⁶⁸ See Chapter II, Part I, Section C.
- ²⁶⁹ See Chapter III, Part I, Section B. 2.
- ²⁷⁰ See Chapter III, Part I, Section C, Sub-section 4.
- ²⁷¹ See Chapter II, Part III, Section A.
- ²⁷² See Chapter III, Part III, Section B.
- ²⁷³ See Chapter II, Part III, Section B.
- ²⁷⁴ See Chapter III, Part III, Section D.
- ²⁷⁵ See Chapter III, Part III, Section D.
- ²⁷⁶ See Chapter II, Part III, Section D.

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Forests are increasingly endangered by unsustainable and illegal logging practices. This book examines forest management laws and their implementation, to determine some of the causes of unsustainable forestry practices. The degree of compliance varies widely across nations. This study contrasts Brazil, a low compliance country, with Finland, a high compliance country. The question 'Can Law Save the Forests?' is discussed, with an exploration of the nature of regulatory approaches, market-oriented economic incentives, and other critical issues that affect compliance with forest management law.

The author clearly and concisely presents the failure to implement forestry laws in Brazil, and their successful enforcement in Finland. Close examination of the Finnish model of forestry law enforcement reveals those factors that could be adapted and applied to Brazil, and to possibly to other tropical forest countries. Sustainable forest management will continue to be unattainable unless a variety of approaches are used, taking into account the interplay of the unique economic, social, and cultural factors that bear on forest management. *Can Law Save the Forests?* is an important empirical study which sheds light on how to ensure sustainable forestry in Brazil and in other tropical forest countries, which urgently need to improve forest law enforcement.

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